Colour Television

Chassis

Q529.1E

LA

Service
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Service

Service Manual

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PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	:	LCD
Screen size	:	32" (82 cm), 16:9
	:	37" (94 cm), 16:9
	:	42" (107 cm), 16:9
	:	47" (120 cm), 16:9
Resolution (H × V pixels)	:	1920 × 1080
	:	1366 × 768
Min. light output (cd/m^2)	:	500
Min. contrast ratio	:	55000:1 (32PFL9603D/10)
	:	33000:1 (32PFL7623D/10)
	:	30000:1 (37", 42" and 47")
Max. response time (ms)	:	2, 3, 5, 6 (depending on display)
Viewing angle (H × V degrees)	:	176 × 176
Tuning system	:	PLL
TV Colour systems	:	PAL B/G, D/K, I
	:	SECAM B/G, D/K, L/L'
	:	DVB-T COFDM 2K/ 8K, MPEG4 (optional)
Video playback	:	NTSC
	:	PAL
	:	SECAM
Tuner bands	:	UHF, VHF, S, Hyper
Supported video formats		
- 60 Hz	:	480i
- 60 Hz	:	480p
- 50 Hz	:	576i
- 50 Hz	:	576p
- 50/60 Hz	:	720p
- 50/60 Hz	:	1080i
- 24/25/30/50/60 Hz	:	1080p
Supported computer formats:		
- 60 Hz	:	640 × 480
- 60 Hz	:	800 × 600
- 60 Hz	:	1024 × 768
- 60 Hz	:	1280 × 768
- 60 Hz	:	1360 × 768
- 60 Hz	:	1920 × 1080i
- 60 Hz	:	1920 × 1080p
Presets/channels	:	100/125 presets
Tuner bands	:	VHF
	:	UHF
	:	S-band
	:	Hyper-band

1.1.2 Sound

Sound systems	:	FM-stereo B/G
	:	NICAM B/G, D/K, I, L
	:	AV Stereo
	:	Virtual Dolby Digital
	:	BBE
Maximum power (W_{RMS})	:	2 × 15

1.1.3 Multimedia

Supported formats	:	Slideshow.alb files
	:	MPEG1
	:	MPEG2
	:	MP3
	:	JPEG
USB input	:	USB1.1 (12 Mbps)
	:	USB2.0 (480 Mbps)
Network	:	DLNA PC Network link

1.1.4 Miscellaneous

Power supply:		
- Mains voltage (V_{AC})	:	220 - 240 ±10%
- Mains frequency (Hz)	:	50 / 60
Ambient conditions:		
- Temperature range (°C)	:	+5 to +35
	:	90% R.H.
Power consumption (values are indicative)		
- Normal operation (W)	:	≈139/140 (32")
	:	≈186 (37")
	:	≈110/248 (42")
	:	≈155/305 (47")
- Standby (W)	:	< 0.15
Dimensions (W × H × D in mm)	:	828 × 543 × 109 (32")
	:	953 × 604 × 101 (37")
	:	1054×658 × 100 (42")
	:	1170×736 × 125 (47")
Weight (kg)	:	16.3 (32")
	:	19.2 (37")
	:	22.7 (42")
	:	35.0 (47")

1.2 Connections

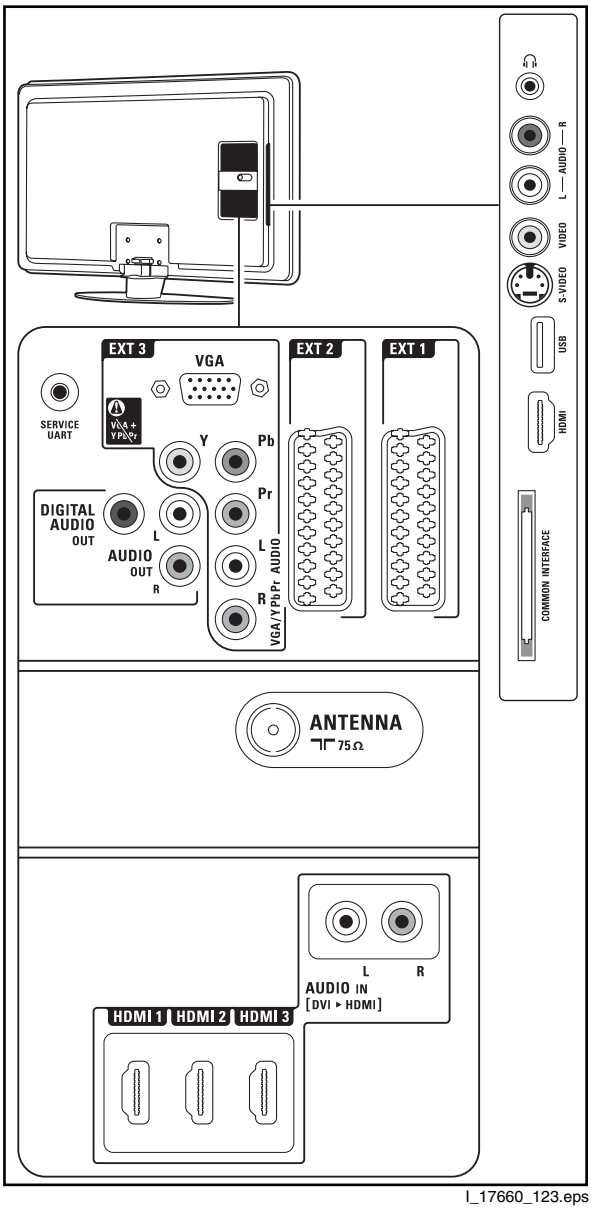

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Figure 1-1 Connection overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, Ye= Yellow.

1.2.1 Side Connections

Headphone (Output)

Bk - Headphone	32 - 600 Ω / 10 mW	

Cinch: Video CVBS - In, Audio - In

Rd - Audio R	0.5 V_{RMS} / 10 kΩ	
Wh - Audio L	0.5 V_{RMS} / 10 kΩ	
Ye - Video CVBS	1 V_{PP} / 75 Ω	

S-Video (Hosiden): Video Y/C - In

1	- Ground Y	Gnd	
2	- Ground C	Gnd	
3	- Video Y	1 V_{PP} / 75 Ω	
4	- Video C	0.3 V_{PP} / 75 Ω	

USB2.0

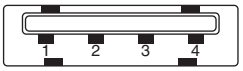

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Figure 1-2 USB (type A)

1	- +5V	
2	- Data (-)	
3	- Data (+)	
4	- Ground	Gnd

HDMI: Digital Video, Digital Audio - In

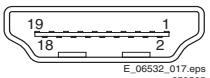

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Figure 1-3 HDMI (type A) connector

1	- D2+	Data channel	
2	- Shield	Gnd	
3	- D2-	Data channel	
4	- D1+	Data channel	
5	- Shield	Gnd	
6	- D1-	Data channel	
7	- D0+	Data channel	
8	- Shield	Gnd	
9	- D0-	Data channel	
10	- CLK+	Data channel	
11	- Shield	Gnd	
12	- CLK-	Data channel	
13	- n.c.		
14	- n.c.		
15	- DDC_SCL	DDC clock	
16	- DDC_SDA	DDC data	
17	- Ground	Gnd	
18	- +5V		
19	- HPD	Hot Plug Detect	
20	- Ground	Gnd	

Common Interface

68p - See diagram B07A

1.2.2 Rear Connections

Service Connector (UART)

1	- Ground	Gnd	⏚
2	- UART_TX	Transmit	⊖→
3	- UART_RX	Receive	⊕

EXT 3 VGA: Video RGB - In

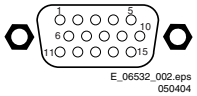

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Figure 1-4 VGA Connector

1	- Video Red	0.7 V_{PP} / 75 Ω	⊕
2	- Video Green	0.7 V_{PP} / 75 Ω	⊕
3	- Video Blue	0.7 V_{PP} / 75 Ω	⊕
4	- n.c.		
5	- Ground	Gnd	⏚
6	- Ground Red	Gnd	⏚
7	- Ground Green	Gnd	⏚
8	- Ground Blue	Gnd	⏚
9	- +5V_{DC}	+5 V	⊕
10	- Ground Sync	Gnd	⏚
11	- n.c.		
12	- DDC_SDA	DDC data	⊕
13	- H-sync	0 - 5 V	⊕
14	- V-sync	0 - 5 V	⊕
15	- DDC_SCL	DDC clock	⊕

EXT3: Cinch: S/PDIF - Out

Bk	- Coaxial	0.4 - 0.6V_{PP} / 75 Ω	⊖→◎

EXT3: Cinch: Video YPbPr - In

Gn	- Video Y	1 V_{PP} / 75 Ω	⊕◎
Bu	- Video Pb	0.7 V_{PP} / 75 Ω	⊕◎
Rd	- Video Pr	0.7 V_{PP} / 75 Ω	⊕◎

EXT3: Cinch: Audio - Out

Rd	- Audio - R	0.5 V_{RMS} / 10 kΩ	⊖→◎
Wh	- Audio - L	0.5 V_{RMS} / 10 kΩ	⊖→◎

EXT3: Cinch: Audio - In

Rd	- Audio - R	0.5 V_{RMS} / 10 kΩ	⊕◎
Wh	- Audio - L	0.5 V_{RMS} / 10 kΩ	⊕◎

EXT1: Video RGB/CVBS - In, Audio - In

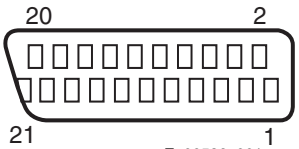

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Figure 1-5 SCART connector

1	- n.c.		
2	- Audio R	0.5 V_{RMS} / 10 kΩ	⊕
3	- n.c.		
4	- Ground Audio	Gnd	⏚
5	- Ground Blue	Gnd	⏚
6	- Audio L	0.5 V_{RMS} / 10 kΩ	⊕
7	- Video Blue	0.7 V_{PP} / 75 Ω	⊕
8	- Function Select	0 - 2 V: INT	
		4.5 - 7 V: EXT 16:9	
		9.5 - 12 V: EXT 4:3	⊕
9	- Ground Green	Gnd	⏚
10	- n.c.		
11	- Video Green	0.7 V_{PP} / 75 Ω	⊕
12	- n.c.		
13	- Ground Red	Gnd	⏚
14	- Ground Data	Gnd	⏚
15	- Video Red	0.7 V_{PP} / 75 Ω	⊕
16	- Status/FBL	0 - 0.4 V: INT	
		1 - 3 V: EXT / 75 Ω	⊕
17	- Ground Video	Gnd	⏚
18	- Ground FBL	Gnd	⏚
19	- n.c.		
20	- Video CVBS	1 V_{PP} / 75 Ω	⊕
21	- Shield	Gnd	⏚

EXT2: Video RGB - In, CVBS - In/Out, Audio - In/Out

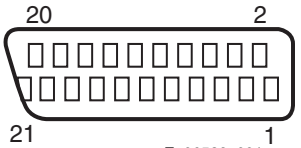

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Figure 1-6 SCART connector

1	- Audio R	0.5 V_{RMS} / 1 kΩ	⊖→
2	- Audio R	0.5 V_{RMS} / 10 kΩ	⊕
3	- Audio L	0.5 V_{RMS} / 1 kΩ	⊖→
4	- Ground Audio	Gnd	⏚
5	- Ground Blue	Gnd	⏚
6	- Audio L	0.5 V_{RMS} / 10 kΩ	⊕
7	- Video Blue	0.7 V_{PP} / 75 Ω	⊕
8	- Function Select	0 - 2 V: INT	
		4.5 - 7 V: EXT 16:9	
		9.5 - 12 V: EXT 4:3	⊕
9	- Ground Green	Gnd	⏚
10	- n.c.		
11	- Video Green	0.7 V_{PP} / 75 Ω	⊕
12	- n.c.		
13	- Ground Red	Gnd	⏚
14	- Ground P50	Gnd	⏚
15	- Video Red	0.7 V_{PP} / 75 Ω	⊕
16	- Status/FBL	0 - 0.4 V: INT	
		1 - 3 V: EXT / 75 Ω	⊕
17	- Ground Video	Gnd	⏚
18	- Ground FBL	Gnd	⏚
19	- Video CVBS	1 V_{PP} / 75 Ω	⊖→
20	- Video CVBS	1 V_{PP} / 75 Ω	⊕
21	- Shield	Gnd	⏚

Aerial - In

-	- IEC-type (EU)	Coax, 75 Ω	⊤

RJ45: Ethernet (if present)

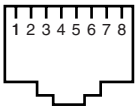

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Figure 1-7 Ethernet connector

1	- TD+	Transmit signal	⊖→
2	- TD-	Transmit signal	⊖→
3	- RD+	Receive signal	⊕
4	- n.c.		
5	- n.c.		
6	- RD-	Receive signal	⊕
7	- n.c.		
8	- n.c.		

HDMI 1, 2 & 3 Digital Video, Digital Audio - In

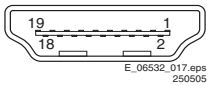

Figure 1-8 HDMI (type A) connector

1	- D2+	Data channel	⊕
2	- Shield	Gnd	⏚
3	- D2-	Data channel	⊕
4	- D1+	Data channel	⊕
5	- Shield	Gnd	⏚
6	- D1-	Data channel	⊕
7	- D0+	Data channel	⊕
8	- Shield	Gnd	⏚
9	- D0-	Data channel	⊕
10	- CLK+	Data channel	⊕
11	- Shield	Gnd	⏚
12	- CLK-	Data channel	⊕
13	- Easylink	Control channel	⊕⊖
14	- n.c.		
15	- DDC_SCL	DDC clock	⊕
16	- DDC_SDA	DDC data	⊕⊖
17	- Ground	Gnd	⏚
18	- +5V		⊕
19	- HPD	Hot Plug Detect	⊕
20	- Ground	Gnd	⏚

Cinch: Audio - In

Rd	- Audio - R	0.5 V_{RMS} / 10 kΩ	⊕⊙
Wh	- Audio - L	0.5 V_{RMS} / 10 kΩ	⊕⊙

1.3 Chassis Overview

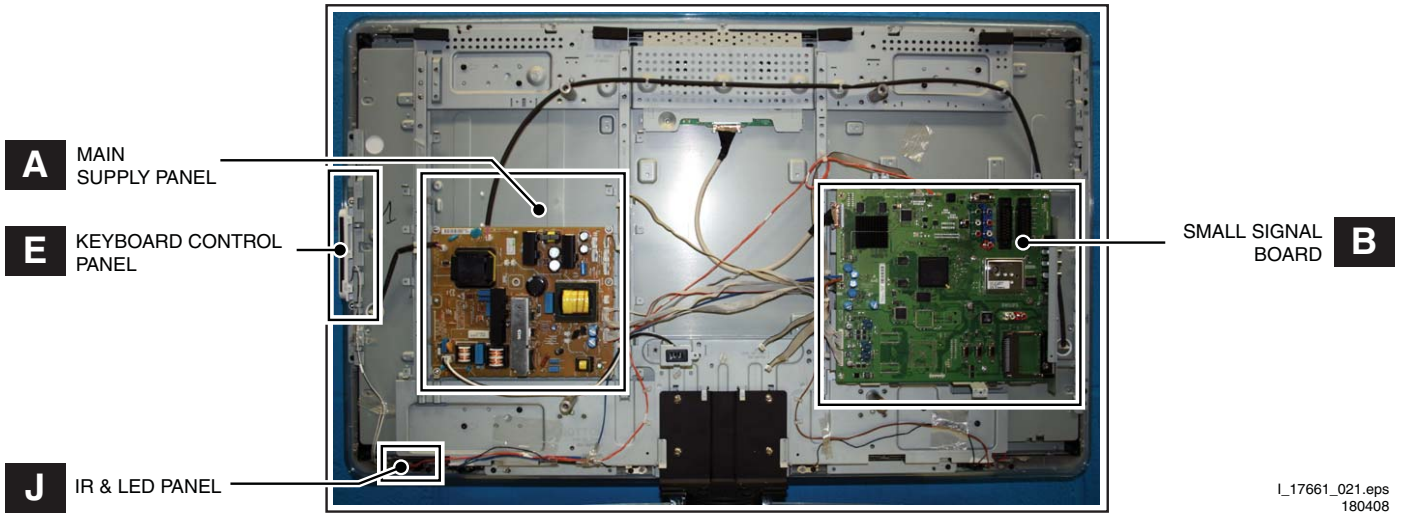

Figure 1-9 PWB/CBA locations 7-series

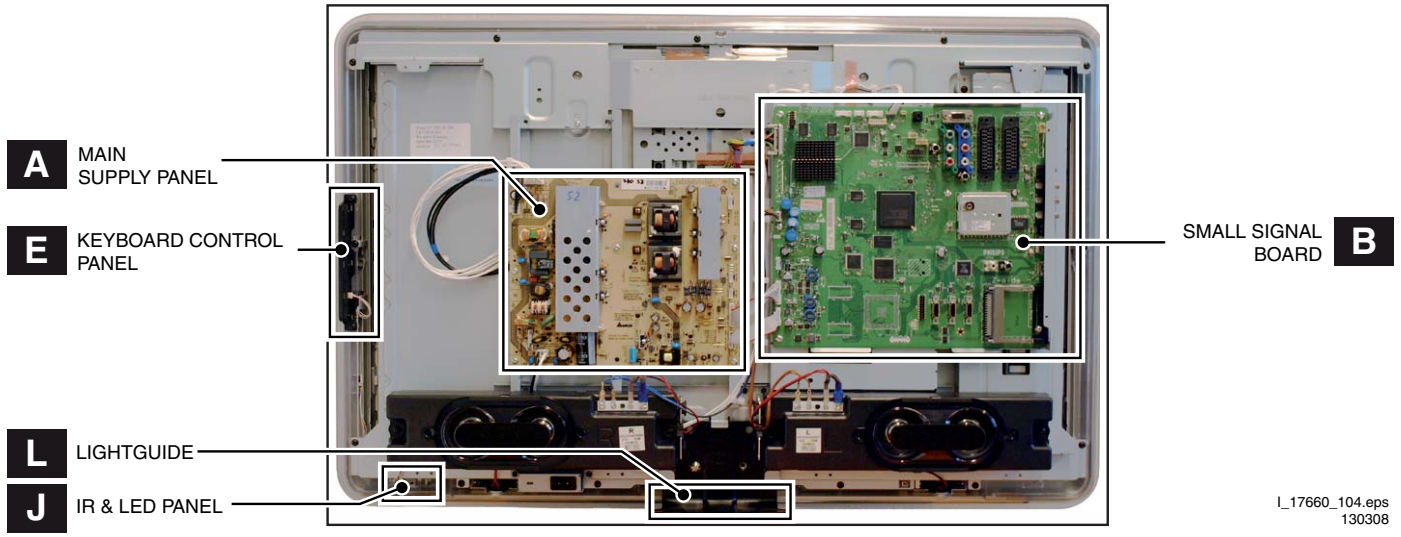

Figure 1-10 PWB/CBA locations 9-series

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions

Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the “on” position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
  4. Switch “off” the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched “on”.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.
- Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the “double-D symbol”, are trademarks of Dolby Laboratories.

2.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an “E” or an “R” (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An “asterisk” (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.3.3 BGA (Ball Grid Array) ICs

Introduction

For more information on how to handle BGA devices, visit this URL: *www.atyourservice.ce.philips.com* (needs subscription, not available for all regions). After login, select “Magazine”, then go to “Repair downloads”. Here you will find Information on how to deal with BGA-ICs.

BGA Temperature Profiles

For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the “Magazine”, chapter “Repair downloads”.
For additional questions please contact your local repair help desk.

2.3.4 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 400°C.
  - To stabilize the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to**

avoid mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

2.3.5 Alternative BOM identification

Be aware: on the European Service website, “Alternative BOM” is referred to as “Design variant”.

The **third digit** in the serial number (example: AG**2**B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.
By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with. If the third digit of the serial number contains the number “1” (example: AG**1**B033500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a “2” (example: AG**2**B0335000001), then the set has been produced according to B.O.M. no. 2. ***This is important for ordering the correct spare parts!***
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26= 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production center (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.

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Figure 2-1 Serial number (example)

2.3.6 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.
If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

2.3.7 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

4. Mechanical Instructions

Index of this chapter:

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Cable Dressing

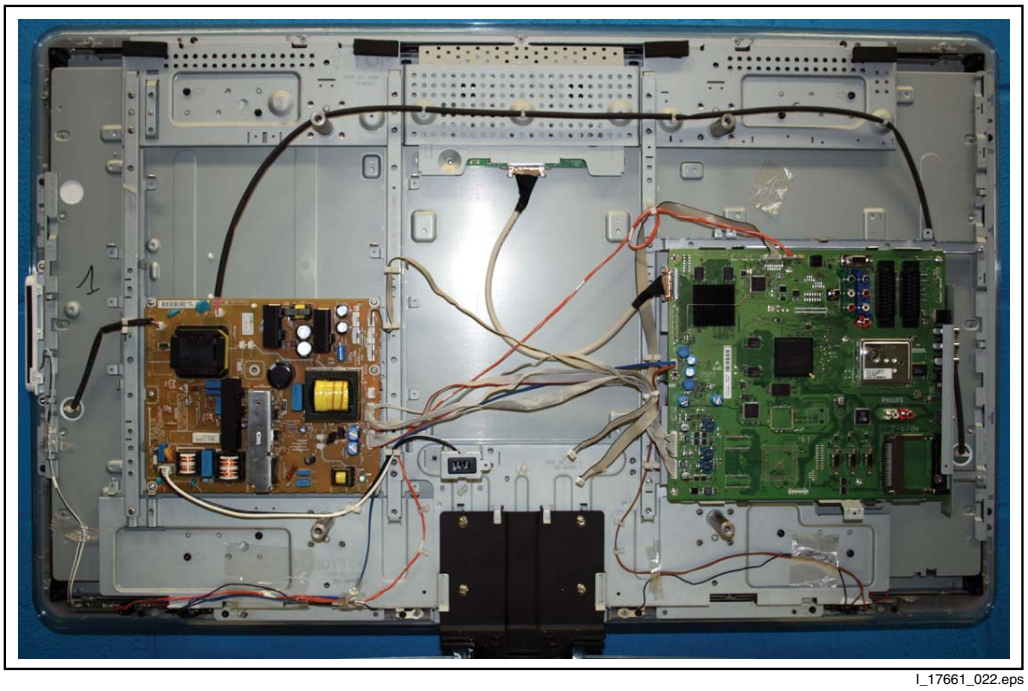

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Figure 4-1 Cable dressing 7-series

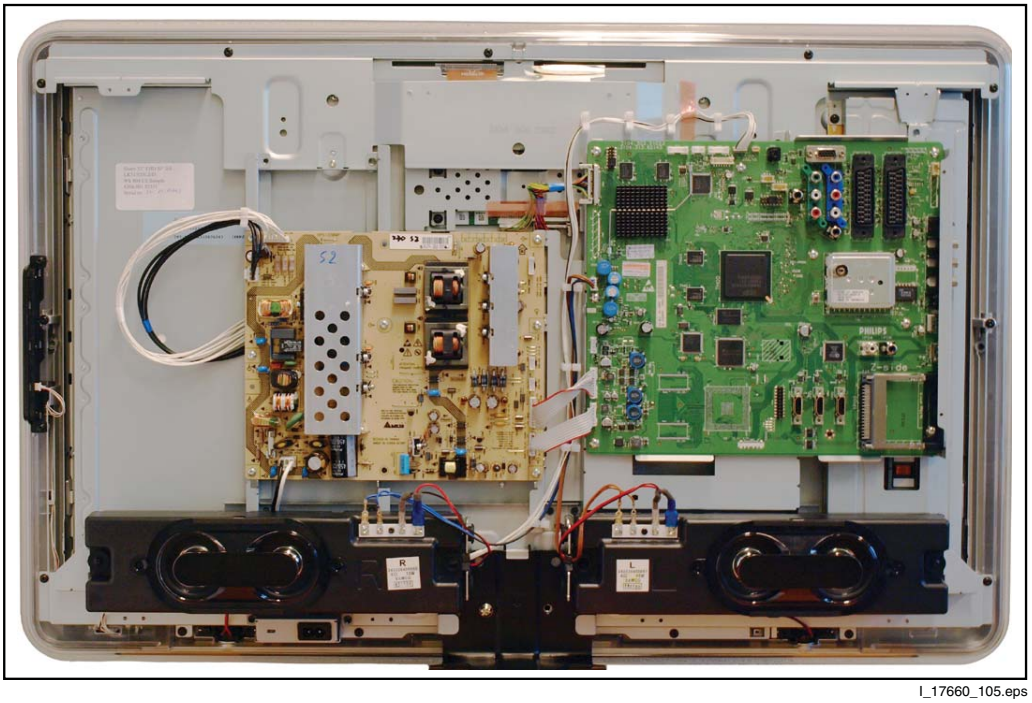

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Figure 4-2 Cable dressing 9-series

4.2 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging (see figure “Rear cover”).
- Foam bars (created for Service).

4.2.1 Foam Bars

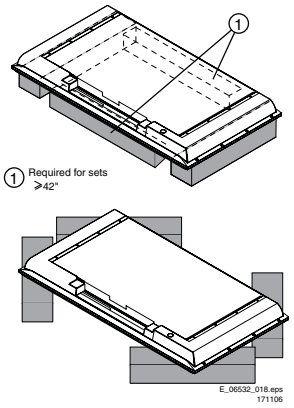

Figure 4-3 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. See figure “Foam bars” for details. Sets with a display of 42" and larger, require **four** foam bars [1]. Ensure that the foam bars are always supporting the cabinet and **never** only the display.
Caution: Failure to follow these guidelines can seriously damage the display!
By laying the TV face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, the screen can be monitored.

4.3 Assy/Panel Removal VE8 Styling

4.3.1 Rear Cover

Warning: Disconnect the mains power cord before removing the rear cover.
Note: It is necessity to release the fixation screws from the stand before removing the rear cover.

Refer to next figures for details.

1. Remove the mushrooms [1].
2. Remove the fixation screws [2] from the hatch and lift the hatch from the rear cover.
3. Unplug the connectors [3].
4. Remove the fixation screws from the stand. Please note that the set is now mechanically not secured and may be unstable.
5. Remove the fixation screws [5] that secure the rear cover.
6. Lift the rear cover from the TV. Make sure that wires and flat foils are not damaged while lifting the rear cover from the set.

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Figure 4-4 Rear Cover

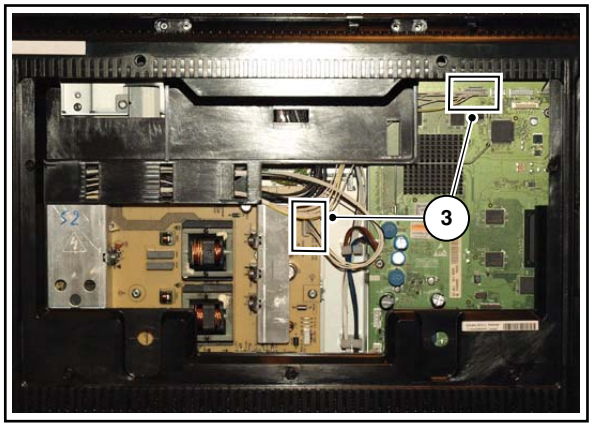

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Figure 4-5 Hatch

4.3.2 Ambilight

Refer to next figure for details.
1. Release the wire from the wire guides [1].
2. Remove the fixation screws [2].
3. Remove the cover screws [3] and take out the whole unit.

When defective, replace the whole unit.

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Figure 4-6 Ambilight inside cover

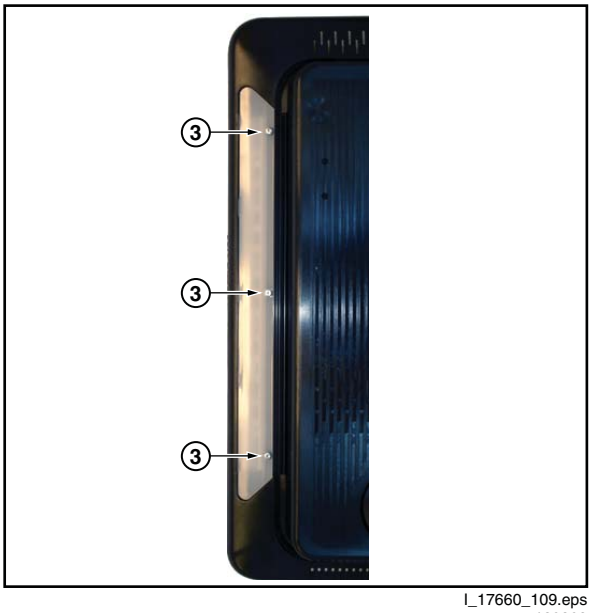

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Figure 4-7 Ambilight outside cover

4.3.3 Key Board

Refer to next figure for details.
1. Unplug the key board connector [1] from the IR & LED board.
2. Remove the screws [2].
3. Lift the unit and take it out of the set.

When defective, replace the whole unit.

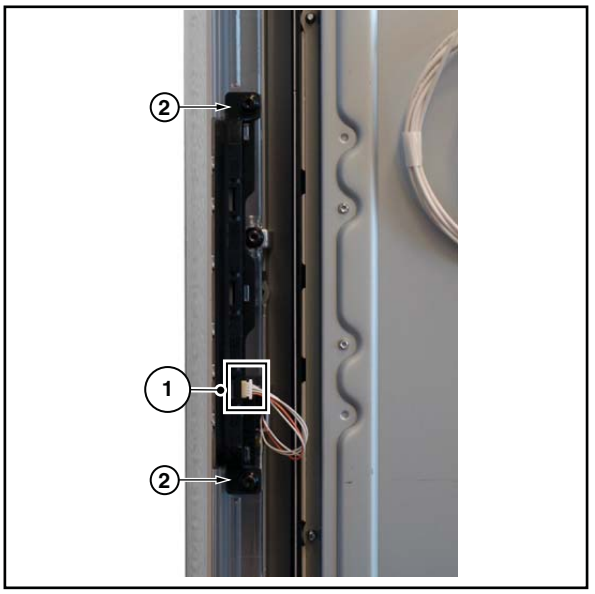

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Figure 4-8 Key Board

4.3.4 Bass-midrange Speakers

Refer to next figure for details.
1. Release the speaker connectors [1] from unit.
2. Remove the screw [1] and lift the whole unit from the set.

Take the speakers out together with their casing. When defective, replace the whole unit.

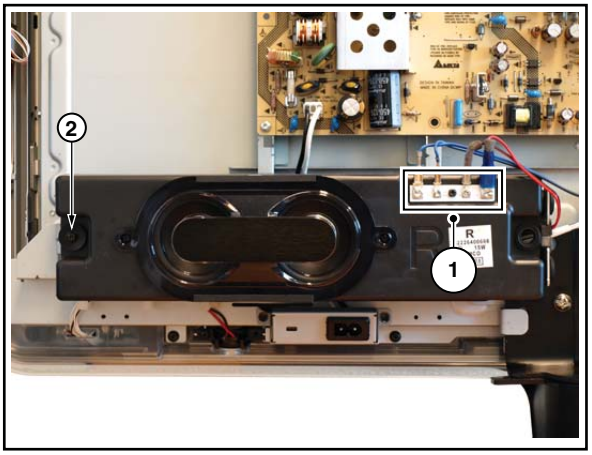

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Figure 4-9 Bass-midrange Speaker

4.3.5 Tweeters

Refer to next figure for details.
1. Remove the bass-midrange speaker as described earlier.
2. Remove the screw [1] and lift the whole unit from the set.

When defective, replace the whole unit.

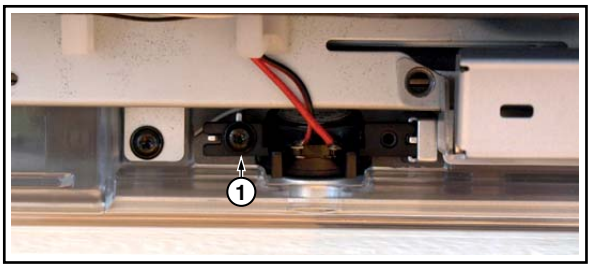

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Figure 4-10 Tweeters

4.3.6 Display Supply Panel

Refer to next figure for details.
1. Unplug the connectors [1].
2. Remove the fixation screws [2].
3. Take the board out.

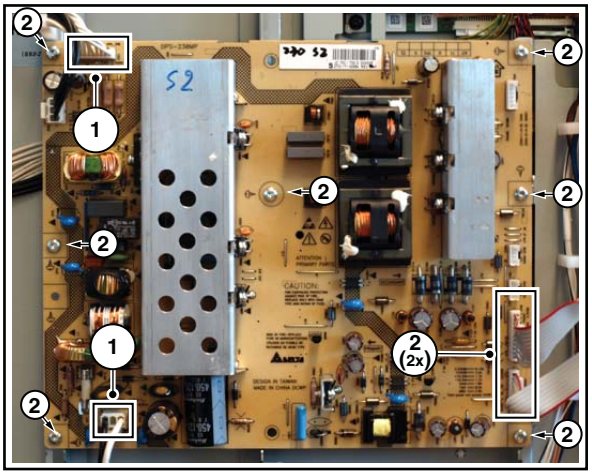

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Figure 4-11 Display Supply Panel

4.3.7 Small Signal Board (SSB)

Refer to next figure for details.
Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.
Refer to next figures or details.
1. Unplug the LVDS connector [1].
   Caution: be careful, as this is a very fragile connector!
2. Unplug the connectors [2].
3. Remove the screw [3] from the side I/O cover.
4. Remove the fixation screws [4].
5. The SSB can now be taken out of the set.

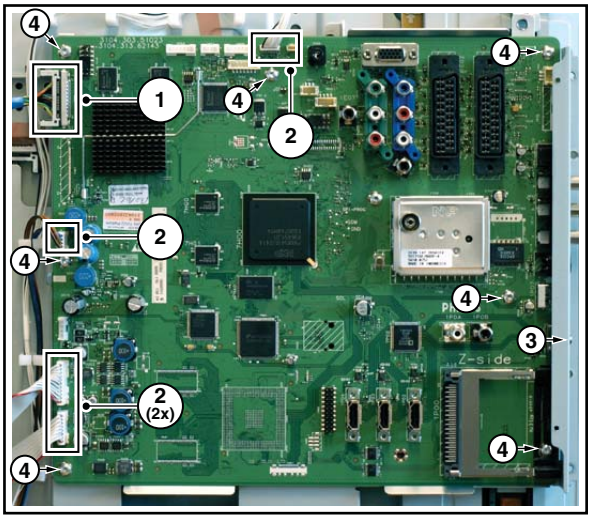

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Figure 4-12 Small Signal Board

4.3.8 LCD Panel

Refer to next figure for details.
1. Remove the SSB as described earlier.
2. Remove the Bass-midrange speakers as described earlier.
3. Remove the Tweeters as described earlier.
4. Unplug the connectors [1].
5. Remove the fixation screws [2].
6. Remove the fixation screws [3].
7. Lift out the sub frame.
8. The LCD panel can now be lifted from the front cabinet.

When defective, replace the whole unit.

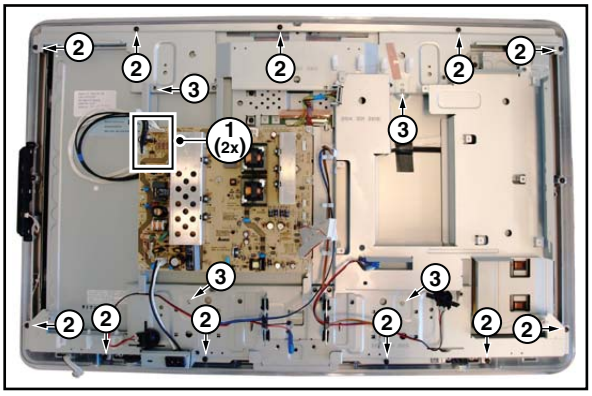

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Figure 4-13 LCD Panel

4.3.9 Rim

Refer to next figure for details.
1. Do all steps as described in the removal of the LCD panel except the last step.
2. Remove the screws [1].

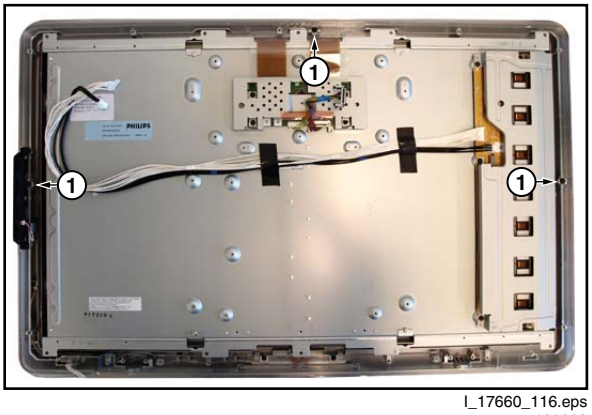

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Figure 4-14 Rim

4.3.10 IR & LED Board

Refer to next figure for details.
1. Do all steps as described in the removal of the Rim.
2. Remove screws [1] and lift the IR & LED Board from the front cover.
3. Lift the board and take it out of the set.
4. Release the cables from the cable clamps.
5. Unplug the connectors [3].

When defective, replace the whole unit.

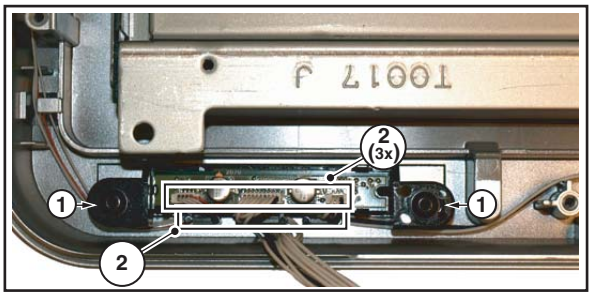

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Figure 4-15 IR & LED Board

4.3.11 Lightguide

Refer to next figure for details.
1. Do all steps as described in the removal of the Rim.
2. Release the cables from the cable clamps [1].
3. Remove screws [2] and lift the lightguide from the front cover.
4. Release the board by pushing up the clamps in the direction of the arrows.
5. Remove the unit from the front cover.

When defective, replace the whole unit.

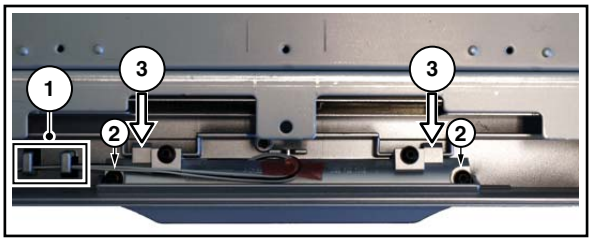

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Figure 4-16 IR & LED Board

4.4 Assy/Panel Removal ME8+ Styling

Refer to the Q528.2E LA Service Manual.

4.5 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:
- While re-assembling, make sure that all cables are placed and connected in their original position. See figure “Cable dressing”.
- Pay special attention not to damage the EMC foams on the SSB shields. Ensure that EMC foams are mounted correctly.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Test Points

As most signals are digital, it will be difficult to measure waveforms with a standard oscilloscope. However, several key ICs are capable of generating test patterns, which can be controlled via ComPair. In this way it is possible to determine which part is defective.

Perform measurements under the following conditions:
- Service Default Mode.
- Video: Colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offers several features for the service technician, while the Customer Service Mode (CSM) is used for communication between the call centre and the customer.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version read-out for all chassis. (see also section “5.4.1 ComPair”).

5.2.1 Service Default Mode (SDM)

Purpose
- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections detected by stand-by processor and make the TV start up to the step just before protection (a sort of automatic stepwise start up). See section “5.3 Stepwise Start-up”.
- To start the blinking LED procedure where only layer 2 errors are displayed. (see also section “5.5 Error Codes”)

Specifications

Table 5-1 SDM default settings

Region	Freq. (MHz)	Default system
Europe, AP(PAL/Multi)	475.25	PAL B/G
Europe, AP DVB-T	546.00 PID Video: 0B 06 PID PCR: 0B 06 PID Audio: 0B 07	DVB-T

- All picture settings at 50% (brightness, colour, contrast).
- All sound settings at 50%, except volume at 25%.
- All service-unfriendly modes (if present) are disabled, like:
  - (Sleep) timer.
  - Child/parental lock.
  - Picture mute (blue mute or black mute).
  - Automatic volume levelling (AVL).
  - Skip/blank of non-favourite pre-sets.

How to Activate SDM

For this chassis there are two kinds of SDM: an **analog SDM** and a **digital SDM**. Tuning will happen according table “SDM Default Settings”.
- **Analog SDM**: use the standard RC-transmitter and key in the code “062596”, directly followed by the “MENU” button. **Note:** It is possible that, together with the SDM, the main menu will appear. To switch it “off”, push the “MENU” button again.
- **Digital SDM**: use the standard RC-transmitter and key in the code “062593”, directly followed by the “MENU” button. **Note:** It is possible that, together with the SDM, the main menu will appear. To switch it “off”, push the “MENU” button again.
- **Analog SDM** can also be activated by shorting for a moment the two solder pads (see figure “Service mode pads”) on the SSB, with the indication “SDM”.

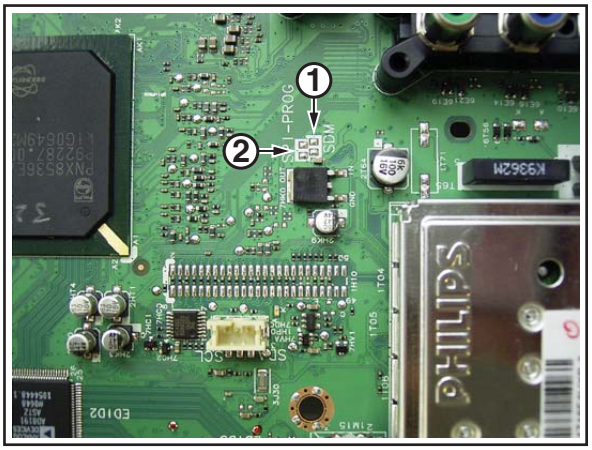

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Figure 5-1 Service mode pads

After activating this mode, “SDM” will appear in the upper right corner of the screen (when a picture is available).

How to Navigate

When the “MENU” button is pressed on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

How to Exit SDM

Use one of the following methods:
- Switch the set to STAND-BY via the RC-transmitter.
- Via a standard customer RC-transmitter: key in “00”-sequence.

5.2.2 Service Alignment Mode (SAM)

Purpose
- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.
- To display (or clear) the error code buffer.

How to Activate SAM

Via a standard RC transmitter: key in the code “062596” directly followed by the “INFO” button. After activating SAM with this method a service warning will appear on the screen, continue by pressing the red button on the RC.

Contents of SAM:

- **Hardware Info.**
  - **A. SW Version.** Displays the software version of the main software (**example:** Q591E-1.2.3.4 = AAAAB_X.Y.W.Z).
    - **AAAA**= the chassis name.
    - **B**= the region: A= AP, E= EU, L= LatAm, U = US. For AP sets it is possible that the Europe software version is used.
    - **X.Y.W.Z**= the software version, where X is the main version number (different numbers are not compatible with one another) and Y.W.Z is the sub version number (a higher number is always compatible with a lower number).
  - **B. SBY PROC Version.** Displays the software version of the stand-by processor.
  - **C. Production Code**. Displays the production code of the TV, this is the serial number as printed on the back of the TV set. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee in a possibility to do this.
- **Operation Hours.** Displays the accumulated total of operation hours (not the stand-by hours). Every time the TV is switched "on/off", 0.5 hours is added to this number.
- **Errors** (followed by maximum 10 errors). The most recent error is displayed at the upper left (for an error explanation see section "5.5 Error Codes").
- **Reset Error Buffer.** When "cursor right" (or the "OK button) is pressed and then the "OK" button is pressed, the error buffer is reset.
- **Alignments.** This will activate the "ALIGNMENTS" sub-menu.
- **Dealer Options.** Extra features for the dealers.
- **Options.** Extra features for Service. For more info regarding option codes, see chapter 8 "Alignments". Note that if the option code numbers are changed, these have to be confirmed with pressing the "OK" button before the options are stored. Otherwise changes will be lost.
- **Initialize NVM.** The moment the processor recognizes a corrupted NVM, the "initialize NVM" line will be highlighted. Now, two things can be done (dependent of the service instructions at that moment):
  - Save the content of the NVM via ComPair for development analysis, **before** initializing. This will give the Service department an extra possibility for diagnosis (e.g. when Development asks for this).
  - Initialize the NVM.

Note: When the NVM is corrupted, or replaced, there is a high possibility that no picture appears because the display code is not correct. So, before initializing the NVM via the SAM, a picture is necessary and therefore the correct display option has to be entered. Refer to chapter 8 "Alignments" for details. To adapt this option, it's advised to use ComPair (the correct HEX values for the options can be found in chapter 8 "Alignments") or a method via a standard RC (described below).

Changing the display option via a standard RC: Key in the code "062598" directly followed by the "MENU" button and "XXX" (where XXX is the 3 digit decimal display code as mentioned in table "Option code overview" in chapter 8 "Alignments"). Make sure to key in all three digits, also the leading zero's. If the above action is successful, the front LED will go out as an indication that the RC sequence was correct. After the display option is changed in the NVM, the TV will go to the Stand-by mode. If the NVM was corrupted or empty before this action, it will be initialized first (loaded with default values). This initializing can take up to 20 seconds.

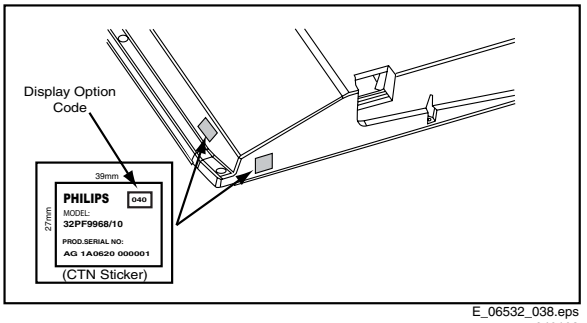

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Figure 5-2 Location of Display Option Code sticker

- **Store - go right.** All options and alignments are stored when pressing "cursor right" (or the "OK" button) and then the "OK"-button.
- **SW Maintenance.**
  - **SW Events.** Not useful for Service purposes. In case of specific software problems, the development department can ask for this info.
  - **HW Events.** Not useful for Service purposes. In case of specific software problems, the development department can ask for this info.
- **Test settings.** For development purposes only.
- **Upload to USB.** To upload several settings from the TV to an USB stick, which is connected to the SSB. The items are "Channel list", "Personal settings", "Option codes", "Display-related alignments" and "History list". First a directory "repair\" has to be created in the root of the USB stick. To upload the settings select each item separately, press "cursor right" (or the "OK button), confirm with "OK" and wait until "Done" appears. In case the download to the USB stick was not successful "Failure" will appear. In this case, check if the USB stick is connected properly and if the directory "repair" is present in the root of the USB stick. Now the settings are stored onto the USB stick and can be used to download onto another TV or other SSB. Uploading is of course only possible if the software is running and if a picture is available. This method is created to be able to save the customer's TV settings and to store them into another SSB.
- **Download to USB.** To download several settings from the USB stick to the TV. Same way of working as with uploading. To make sure that the download of the channel list from USB to the TV is executed properly, it is necessary to restart the TV and tune to a valid preset if necessary.
  Note: The "History list item" can not be downloaded from USB to the TV. This is a "read-only" item. In case of specific problems, the development department can ask for this info.
- **Development file versions.** Not useful for Service purposes, this information is only used by the development department.

How to Navigate

- In SAM, the menu items can be selected with the "CURSOR UP/DOWN" key (or the scroll wheel) on the RC-transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.
- With the "CURSOR LEFT/RIGHT" keys (or the scroll wheel), it is possible to:
  - (De) activate the selected menu item.
  - (De) activate the selected sub menu.
- With the "OK" key, it is possible to activate the selected action.

How to Exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter.

- Switch the set to STAND-BY via the RC-transmitter.

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer or the Customer Helpdesk. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.
The CSM is a read only mode; therefore, modifications in this mode are not possible.
When in this chassis CSM is activated, a testpattern will be displayed during 5 seconds (1 second Blue, 1 second Green and 1 second Red, then again 1 second Blue and 1 second Green). This test pattern is generated by the PNX5100. So if this test pattern is shown, it could be determined that the back end video chain (PNX5100, LVDS, and display) of the SSB is working.
To determine if the MPEG4-circuit is working (in case of an MPEG4-set), push the “MUTE” button during CSM to display another test pattern. This is a forced input selection to make sure the test pattern is visible. If this test pattern is not shown, it is possible that the settings are not correct (for instance in SAM the MPEG4-option is “NOT PRESENT”). The display of this test pattern is a toggle function, pressing the “MUTE” key again removes this test pattern.

When CSM is activated and there is a USB stick connected to the TV, the software will dump the complete CSM content to the USB stick. The file (Csm.txt) will be saved in the root of the USB stick. This info can be handy if no information is displayed.

Also when CSM is activated, the layer 1 error is displayed via blinking LED. Only the latest error is displayed. (see also section “5.5 Error Codes”).

How to Activate CSM

Key in the code “123654” via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!

How to Navigate

By means of the “CURSOR-DOWN/UP” knob (or the scroll wheel) on the RC-transmitter, can be navigated through the menus.

Contents of CSM

The contents are reduced to 3 pages: General, Software versions and Quality items. The group names itself are not shown anywhere in the CSM menu.

General

- **Set Type.** This information is very helpful for a helpdesk/ workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set. Note that if an NVM is replaced or is initialized after corruption, this set type has to be re-written to NVM. ComPair will foresee in a possibility to do this.
- **Production Code.** Displays the production code (the serial number) of the TV. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee a in possibility to do this.
- **Installed date.** Indicates the date of the first installation of the TV. This date is acquired via time extraction.
- **Options 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **Options 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- **12NC SSB.** Gives an identification of the SSB as stored in NVM. Note that if an NVM is replaced or is initialized after corruption, this identification number has to be re-written to NVM. ComPair will foresee in a possibility to do this. This identification number is the 12nc number of the SSB.
- **12NC display.** Shows the 12NC of the display
- **12NC supply.** Shows the 12NC of the supply.
- **12NC “bolt-on”.** Shows the 12NC of the “BOLT-ON”-module.

Software versions

- **Current main SW.** Displays the built-in main software version. In case of field problems related to software, software can be upgraded. As this software is consumer upgradeable, it will also be published on the Internet. Example: Q591E_1.2.3.4
- **Standby SW.** Displays the built-in stand-by processor software version. Upgrading this software will be possible via ComPair or via USB (see chapter Software upgrade). Example: STDBY_3.0.1.2.
- **MOP ambient light SW.** Displays the MOP ambient light EPLD SW.
- **MPEG4 software.** Displays the MPEG4 software (optional for sets with MPEG4).
- **PNX5100 boot NVM.** Displays the SW-version that is used in the PNX5100 boot NVM.

Quality items

- **Signal quality.** Poor / average /good
- **Child lock.** Not active / active. This is a combined item for locks. If any lock (Preset lock, child lock, lock after or parental lock) is active, the item shall show “active”.
- **Table channel changed.** This item is for development purpose, it will be defined later.
- **Key missing.** This is a combined item for keys. The keys have a separate bit and the sum is displayed in decimal value.
  - HDMI key valid = 001
  - MAC key valid = 010
    Important remark here : due to a software bug, the MAC key is missing and not valid when “2” is displayed in CSM.So, if for instance the HDMI and MAC keys are both valid, the decimal value in CSM “1” is displayed and not “3”.
  - BDS key valid = 100
    If 3 keys are valid the value: “5” is displayed(should be “7” but due to the software bug).
- **CI slot present.** If the common interface module is detected the result will be “YES”, else “NO”.
- **HDMI input format.** The detected input format of the HDMI.
- **HDMI audio input stream.** The HDMI audio input stream is displayed: present / not present.
- **HDMI video input stream.** The HDMI video input stream is displayed: present / not present.

How to Exit CSM

Press “MENU” on the RC-transmitter.

5.3 Stepwise Start-up

When the TV is in a protection state due to an error detected by stand-by software (error blinking is displayed) **and** SDM is activated via shortcutting the pins on the SSB, the TV starts up until it reaches the situation just before protection. So, this is a kind of automatic stepwise start-up. In combination with the start-up diagrams below, you can see which supplies are present at a certain moment. Important to know is, that if e.g. the 3V3 detection fails and thus error layer 2 = 18 is blinking while the TV is restarted via SDM, the Stand-by Processor will enable the 3V3, but the TV set will not go to protection now. The TV will stay in this situation until it is reset (Mains/AC Power supply interrupted). **Caution:** in case the start up in this mode with a faulty FET 7U08 is done, you can destroy all IC's supplied by the +3V3, due to overvoltage (12V on 3V3-line). It is recommended to measure first the FET 7U08 or others FET's on shortcircuit before activating SDM via the service pads.

The abbreviations "SP" and "MP" in the figures stand for:

- SP: protection or error detected by the **S**tand-by **P**rocessor.
- MP: protection or error detected by the MIPS **M**ain **P**rocessor.

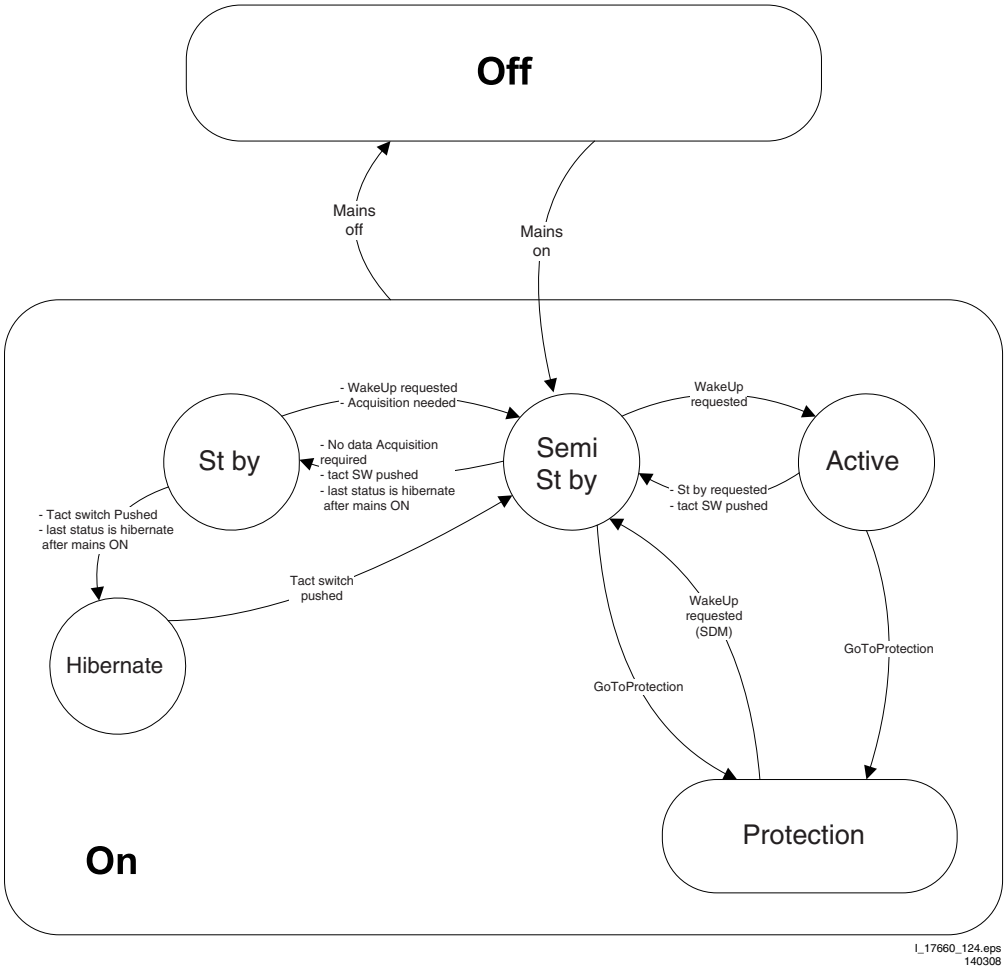


Figure 5-3 Transition diagram

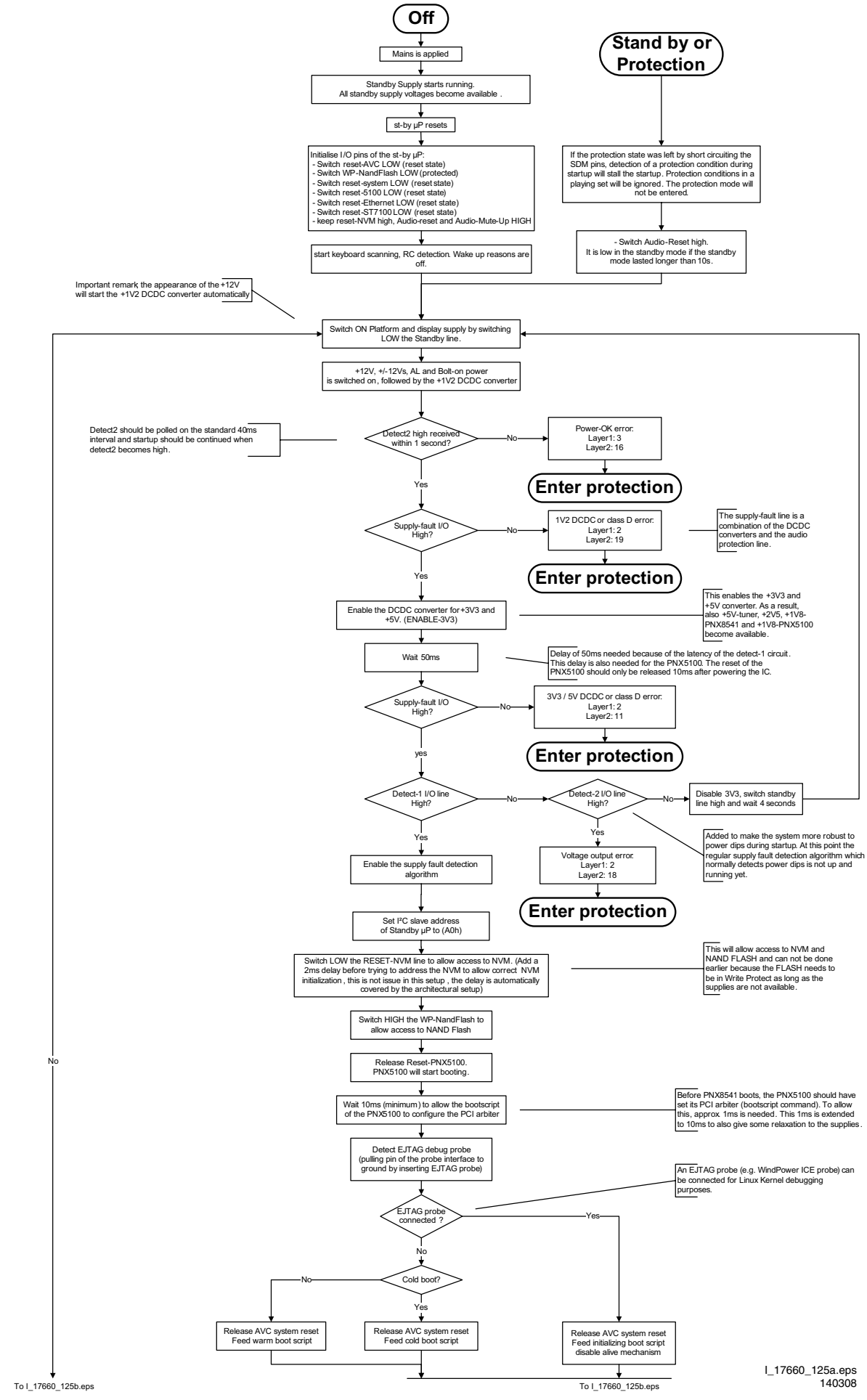


Figure 5-4 “Off” to “Semi Stand-by” flowchart (part 1)

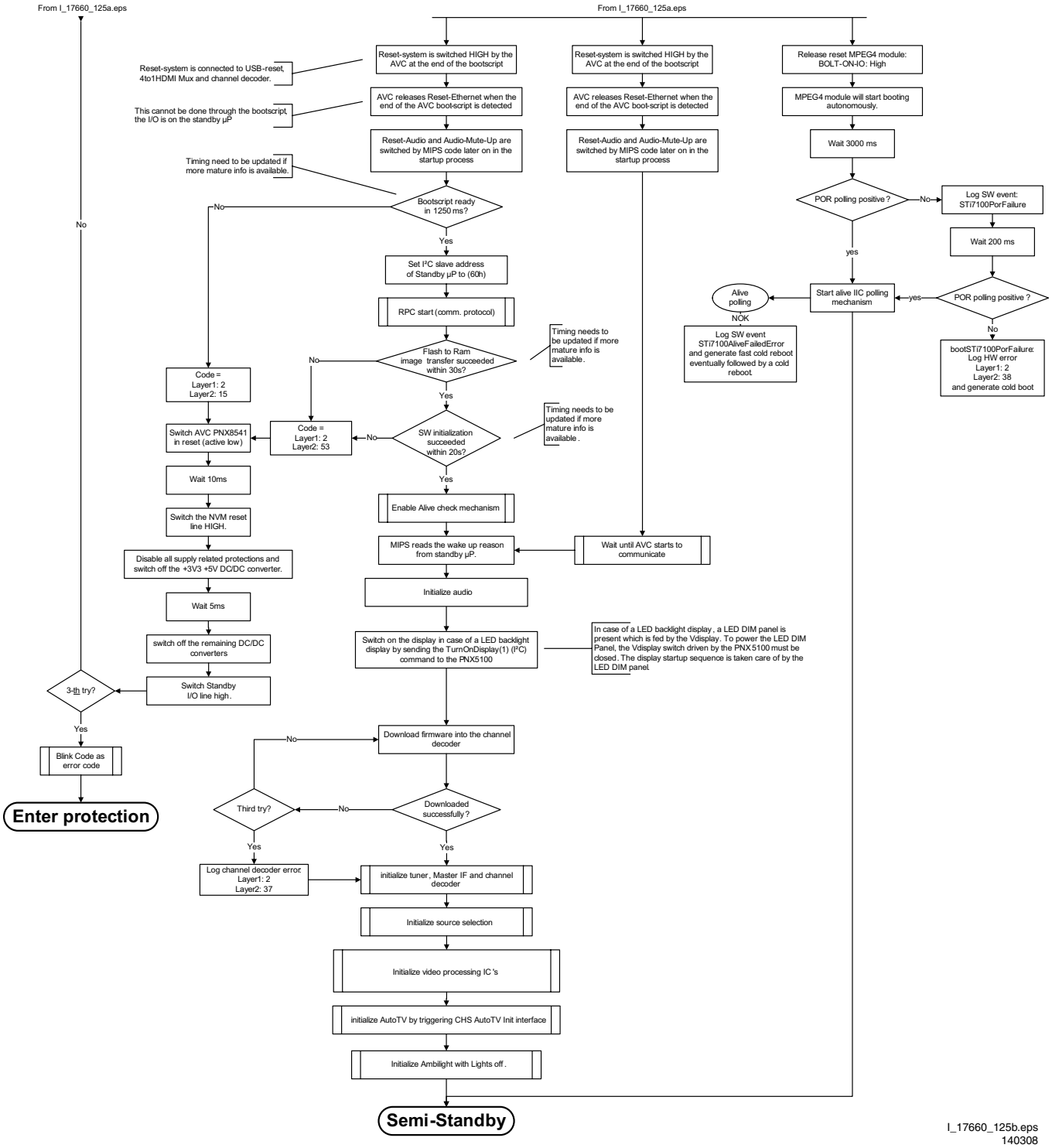


Figure 5-5 “Off” to “Semi Stand-by” flowchart (part 2)

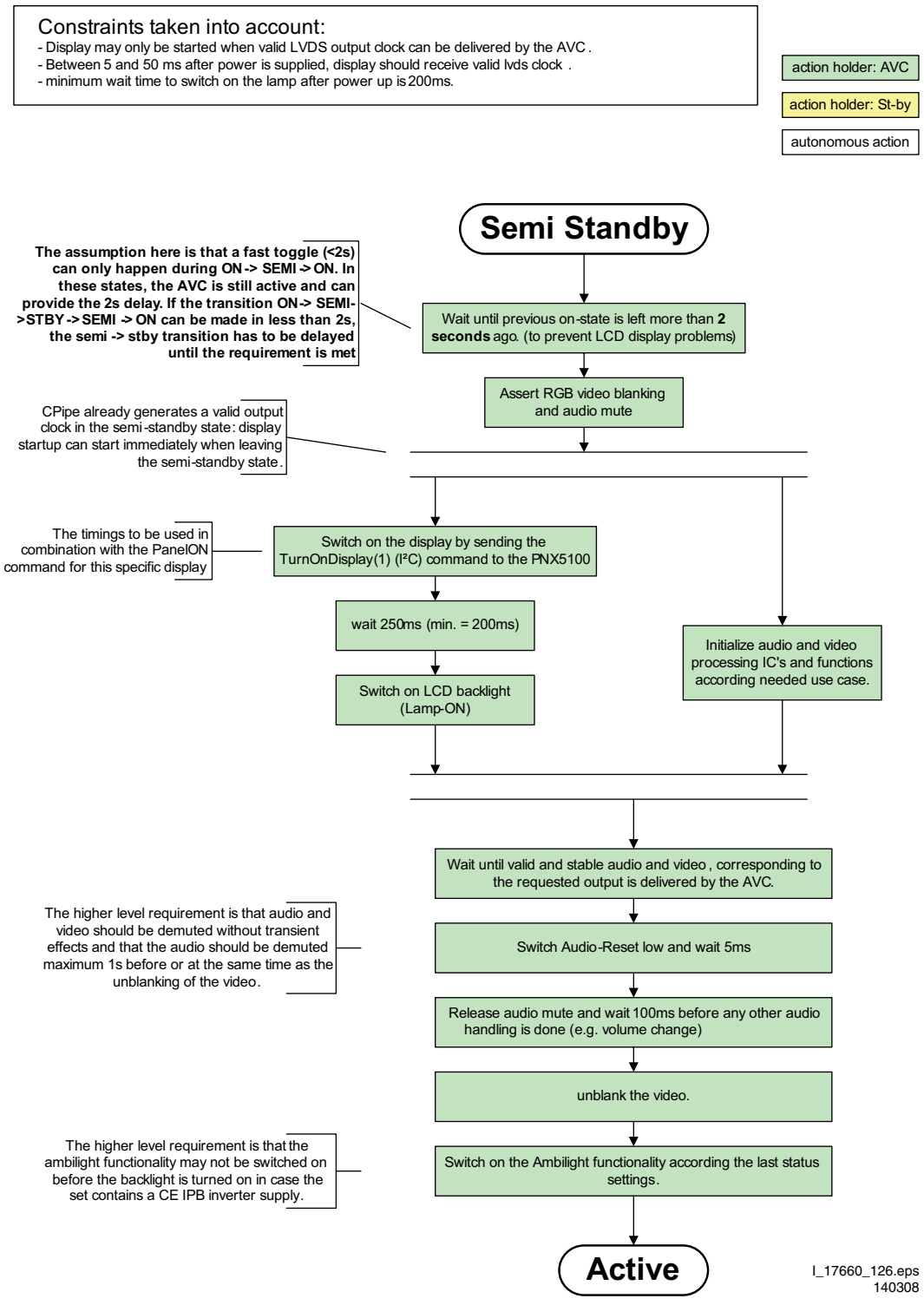


Figure 5-6 "Semi Stand-by" to "Active" flowchart

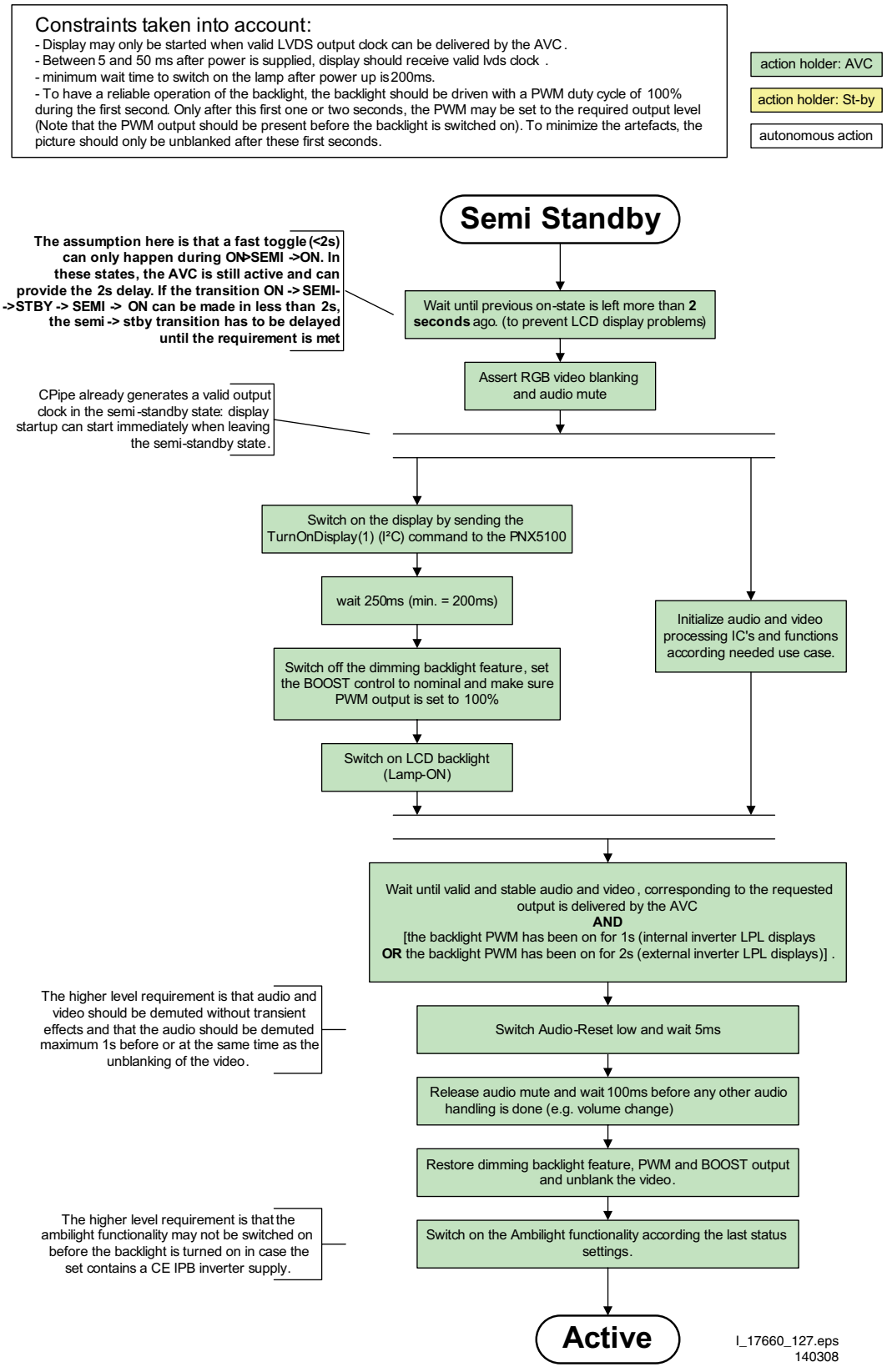


Figure 5-7 "Semi Stand-by" to "Active" flowchart LCD with preheat

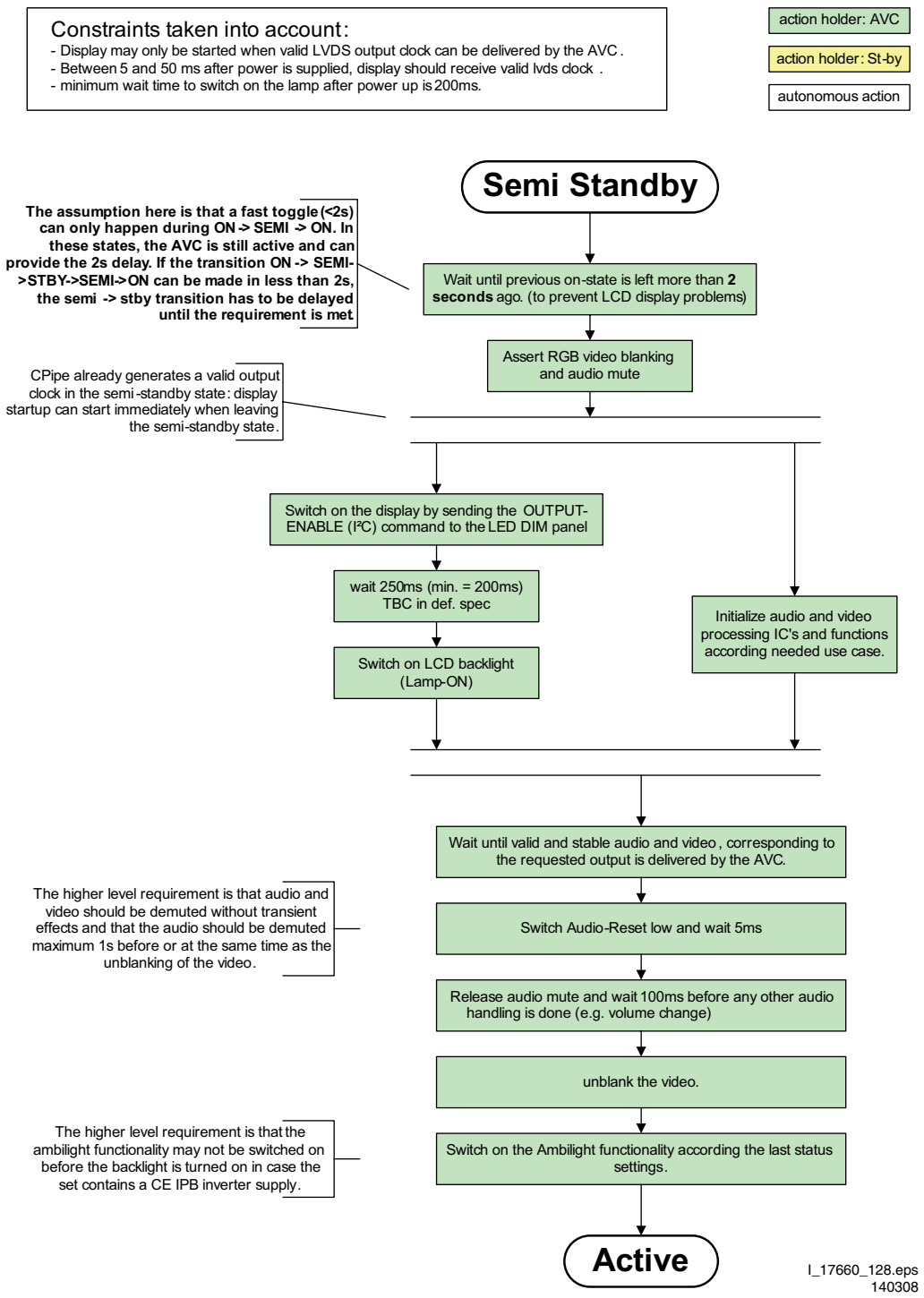


Figure 5-8 "Semi Stand-by" to "Active" flowchart (LED backlight)

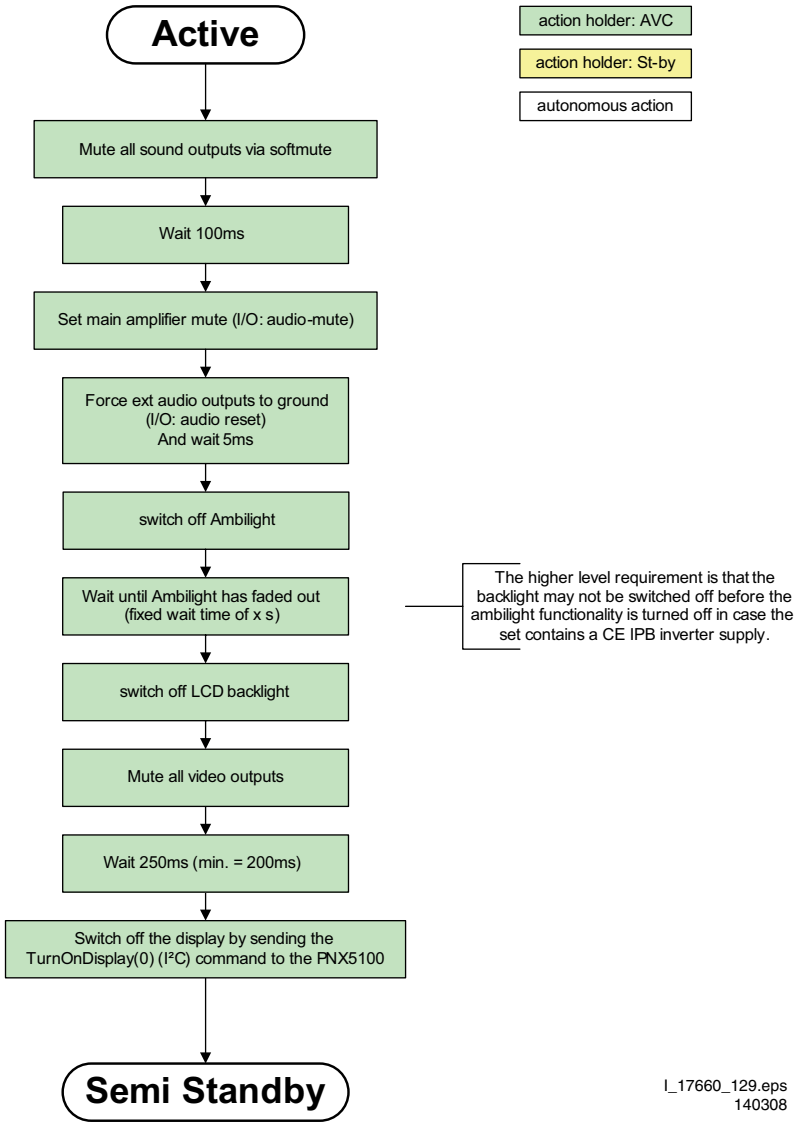


Figure 5-9 “Active” to “Semi Stand-by” flowchart (LCD non DFI)

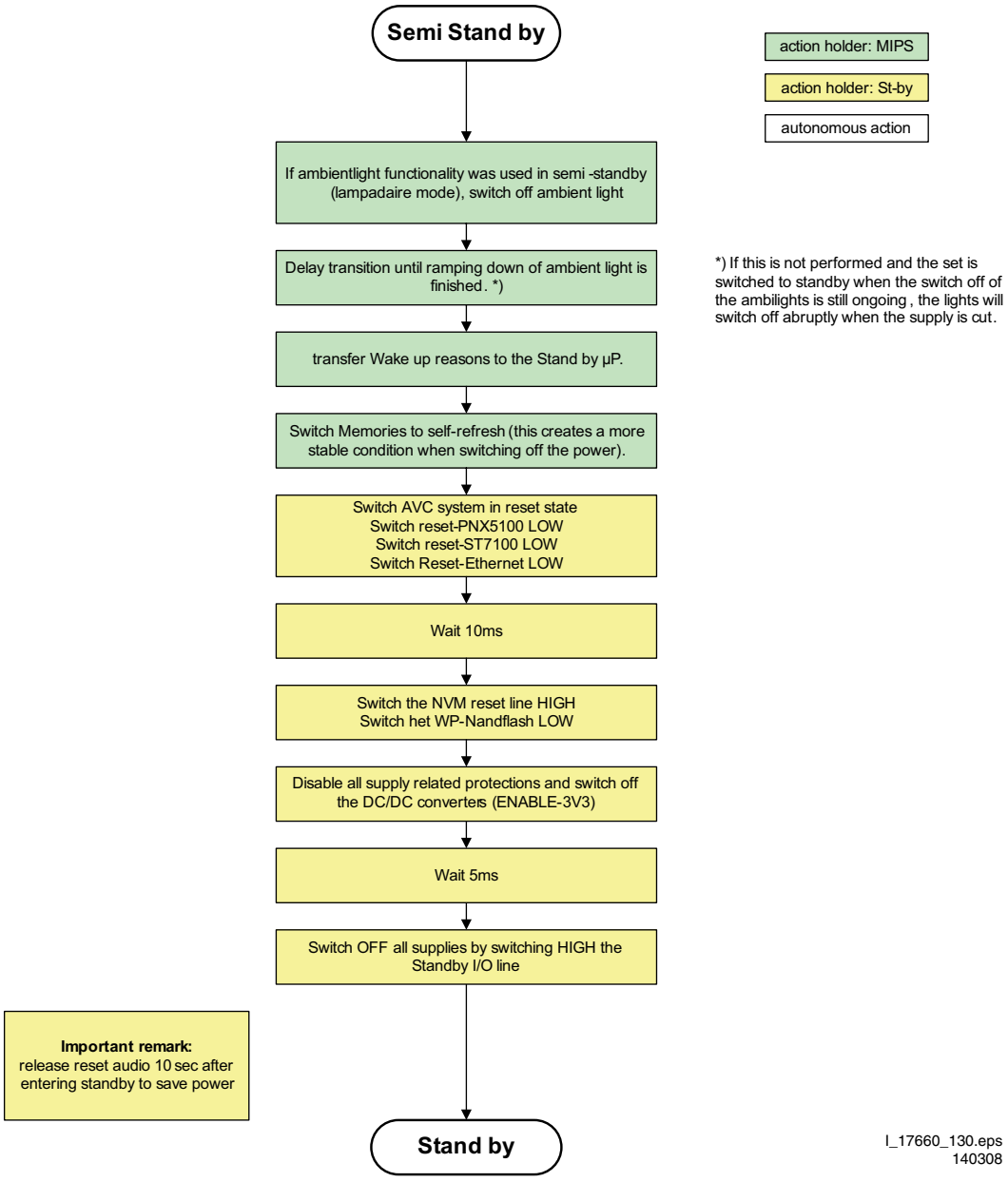


Figure 5-10 "Semi Stand-by" to "Stand-by" flowchart

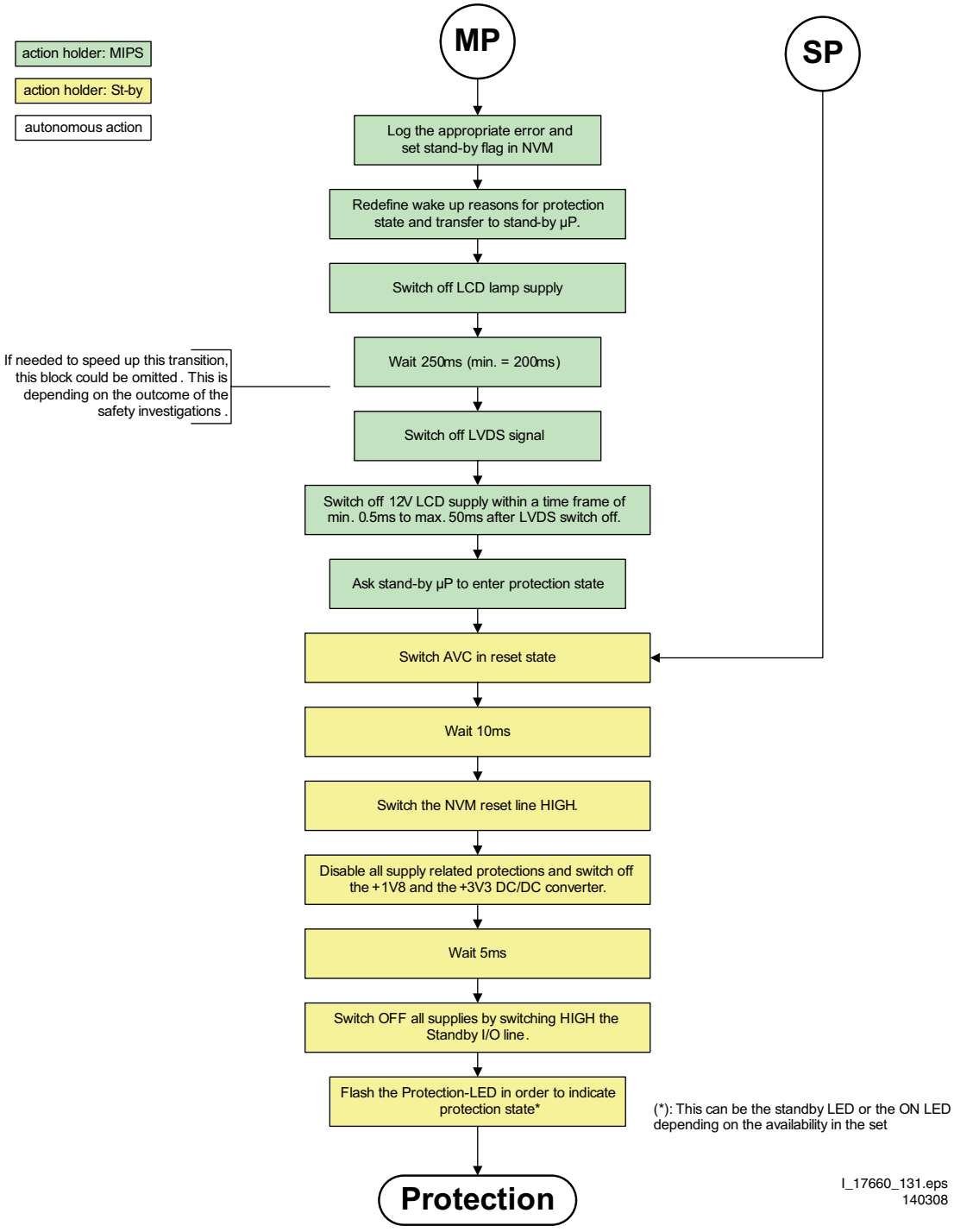


Figure 5-11 "To Protection State" flowchart

5.4 Service Tools

5.4.1 ComPair

Introduction

ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products. and offers the following:

1. ComPair helps to quickly get an understanding on how to repair the chassis in a short and effective way.
2. ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. No knowledge on I^2C or UART commands is necessary, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the uP is working) and all repair information is directly available.
4. ComPair features TV software up possibilities.

Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair II interface box is connected **to the PC** via an USB cable. For the TV chassis, the ComPair interface box and the TV communicate via a bi-directional cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television, by a combination of automatic diagnostics and an interactive question/answer procedure.

How to Connect
This is described in the chassis fault finding database in ComPair.

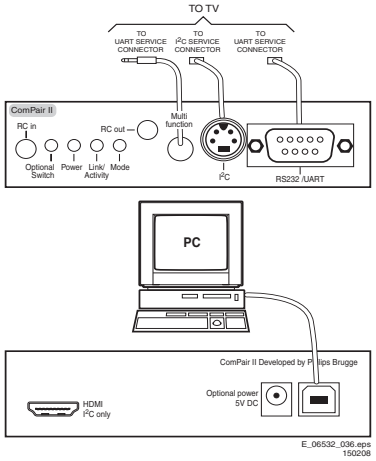


Figure 5-12 ComPair II interface connection

Caution: It is compulsory to connect the TV to the PC as shown in the picture above (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be blown!

How to Order
ComPair II order codes:
- ComPair II interface: 3122 785 91020.
- Software is available via internet: http://www.atyourservice.ce.philips.com
- ComPair UART interface cable for Q52x.x. (using 3.5 mm Mini Jack connector): 3104 311 12742.

Note: While encounting problems, contact the local support desk.

5.4.2 Memory and Audio Test

With this tool you can test the memory of the PNX8541, as well if the PNX5100 is enabled and audio-testing.

What is needed?
- An USB-stick.
- "TESTSCRIPT Q529" (3104 337 05021). Downloadable from the Philips Service website from the section "Software for Service only".
- A ComPair/service cable (3104 311 12742)

Procedure
Create a directory "JETTFILES" under the root of the USB-stick
- Place "MemoryTestPNX8635.bin" and "autojett.bin" (available in "TESTSCRIPT Q529") under the directory "JETTFILES"
- Install the computer program "BOARDTESTLOGGER" (available in "TESTSCRIPT Q529") on the PC
- Connect a "ComPair/service"-cable from the service-connector in the set to the COM1-port of the PC
- Start-up the program "BOARDTESTLOGGER" and select "COM1"
- Put the USB stick into the TV and startup the TV while pressing the "i+"-button on a Philips DVD RC6 remote control (it's also possible to use a TV remote in "DVD"-mode)
- On the PC the memory test is shown now. This is also visible on the TV screen.
- In "BOARDTESTLOGGER" an option "Send extra UART command" can be found where you can select "AUD1".

This command generates hear test tones of 200, 400, 1000, 2000, 3000, 5000, 8000 and 12500Hz.

5.4.3 LVDS Tool

Support of this LVDS Tool has been discontinued.

5.5 Error Codes

5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.
When an error occurs, it is added to the list of errors, provided the list is not full. When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained).
To prevent that an occasional error stays in the list forever, the error is removed from the list after more than 50 hrs. of operation.
When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

New in this chassis is the way errors can be displayed:

- There is a simple blinking LED procedure for board level repair (home repair) so called LAYER 1 errors next to the existing errors which are LAYER 2 errors.(see table 5-2 error code overview).
  - LAYER 1 errors are one digit errors.
  - LAYER 2 errors are 2 digit errors.
- In protection mode.
  - From consumer mode: **LAYER 1.**
  - From SDM mode: **LAYER 2**.
- **Fatal errors, if I2C bus is blocked and the set reboots, CSM and SAM are not selectable.**
  - From consumer mode: **LAYER 1.**
  - From SDM mode: **LAYER 2**.
    Important remark:
    For all errors detected by MIPS which are fatal => rebooting of the TV set (reboot starts after LAYER error 1 blinking), one should short the solder paths at start-up from the power OFF state by mains interruption and not via the power button to trigger the SDM via the hardware pins.
- In CSM mode
  - When entering CSM: error **LAYER 1** will be displayed by blinking LED. Only the latest error is shown.
- In SDM mode
  - When SDM is entered via Remote Control code or the hardware pins, **LAYER 2** is displayed via blinking LED.
- In the ON state
  - In "Display error mode", set with the RC commands "mute_06250X _OK" **LAYER 2** errors are displayed via blinking LED.
- Error display on screen.
  - In CSM no error codes are displayed on screen.
  - In SAM the complete error list is shown.

Basically there are three kinds of errors:
- **Errors detected by the Stand-by software which lead to protection.** These errors will always lead to protection and an automatic start of the blinking LED LAYER error 1. (see section "5.6 The Blinking LED Procedure").
- **Errors detected by the Stand-by software which not lead to protection.** In this case the front LED should blink the involved error. See also section "5.5 Error Codes, 5.5.4 Error Buffer, Extra Info". Note that it can take up several minutes before the TV starts blinking the error (e.g. LAYER error 1 = 2, LAYER error 2 = 15 or 53).

- **Errors detected by main software (MIPS).** In this case the error will be logged into the error buffer and can be read out via ComPair, via blinking LED method LAYER error 1-2, or in case picture is visible, via SAM.

5.5.2 How to Read the Error Buffer

Use one of the following methods:
- On screen via the SAM (only when a picture is visible). E.g.:
  - **00 00 00 00 00**: No errors detected
  - **23 00 00 00 00**: Error code 23 is the last and only detected error.
  - **37 23 00 00 00**: Error code 23 was first detected and error code 37 is the last detected error.
  - Note that no protection errors can be logged in the error buffer.
- Via the blinking LED procedure. See section 5.5.3 How to Clear the Error Buffer.
- Via ComPair.

5.5.3 How to Clear the Error Buffer

Use one of the following methods:
- By activation of the “RESET ERROR BUFFER” command in the SAM menu.
- With a normal RC, key in sequence “MUTE” followed by “062599” and “OK”.
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Buffer

In case of non-intermittent faults, clear the error buffer before starting to repair (**before** clearing the buffer, write down the content, as this history can give significant information). This to ensure that old error codes are no longer present.
If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g. a fault in the protection detection circuitry can also lead to a protection).
There are several mechanisms of error detection:
- Via error bits in the status registers of ICs.
- Via polling on I/O pins going to the stand-by processor.
- Via sensing of analog values on the stand-by processor or the PNX8541.
- Via a “not acknowledge” of an I^2C communication.

Take notice that some errors need several minutes before they start blinking or before they will be logged. So in case of problems wait 2 minutes from start-up onwards, and then check if the front LED is blinking or if an error is logged.

Table 5-2 Error code overview

Description	Layer 1	Layer 2	Monitored by	Error/ Prot	Error Buffer/ Blinking LED	Device	Defective Board
I^2C3	2	13	MIPS	E	BL / EB	SCL/D-SSB	SSB
I^2C4	5	14	MIPS	E	BL / EB	SCL/D-DISP	Display (LED back light only)
PNX doesn't boot (HW cause)	2	15	Stby µP	E	BL	PNX8541 I^2C blocked	SSB
12V	3	16	Stby µP	P	BL	/	Supply
1V2, 3V3, 5V to low	2	18	Stby µP	P	BL	/	SSB
1V2 or Class D	2	19	Stby µP	P	BL	/	SSB
3V3/5V DCDC to high	2	11	Stby µP	P	BL	/	SSB
PNX 5100	2	21	MIPS	E	EB	PNX5100	SSB
HDMI mux	2	23	MIPS	E	EB	AD8197A	SSB
I^2C switch	2	24	MIPS	E	EB	PCA9540	SSB
Master IF	2	26	MIPS	E	EB	TDA9898	SSB
FPGA Ambilight	2	28	MIPS	E	EB	/	SSB
Tuner	2	34	MIPS	E	EB	UV1783S/TD1716	SSB
Channel Decoder DVB-T	2	37	MIPS	E	EB	TDA10048	SSB
ST7100	2	38	MIPS	E	EB	ST7100	SSB
MHP	6	39	MIPS	E	EB	/	MHP module
Fan I2C expander	7	41	MIPS	E	EB	PCA9533	FAN module
T° sensor	7	42	MIPS	E	EB	LM 75	T° sensor
FAN 1	7	43	MIPS	E	EB		FAN
FAN 2	7	44	MIPS	E	EB		FAN
main NVM	2	/	MIPS	E	X	STM24C128	SSB
Channel decoder DVB-C	2	48	MIPS	E	EB	TDA 10023	SSB
PNX doesn't boot (SW cause)	2	53	Stby µP	E	BL	PNX8541	SSB
Display (only LED back light)	5	64	MIPS	E	BL / EB		Display

Extra Info

- **Rebooting.** When a TV is constantly rebooting due to internal problems, most of the time no errors will be logged or blinked. This rebooting can be recognized via a ComPair interface and Hyperterminal (for Hyperterminal settings, see section "5.8 Fault Finding and Repair Tips, 5.8.6 Logging). It's shown that the loggings which are generated by the main software keep continuing. In this case diagnose has to be done via ComPair.
- **Error 11 (3V3/5V too high)**. This protection can occur during start up (LAYER error 1 = 2). Be careful to overrule this protection via SDM for the reason supply related devices can be possibly destroyed here.
- **Error 13 (I^2C bus 3 blocked)**. At the time of release of this manual, this error was not working as expected. Current situation: when this error occurs, the TV will constantly reboot due to the blocked bus. The best way for further diagnosis here, is to use ComPair.
- **Error 15 (PNX8541 doesn't boot)**. Indicates that the main processor was not able to read his bootscript. This error will point to a hardware problem around the PNX8541 (supplies not OK, PNX 8541 completely dead, I^2C link between PNX and Stand-by Processor broken, etc...). When error 15 occurs it is also possible that I^2C2 bus is blocked (NVM). I^2C2 can be indicated in the schematics as follows: SCL-UP-MIPS, SDA-UP-MIPS, SCL-2 or SDA-2. Other root causes for this error can be due to hardware problems with : NVM PNX5100, PNX5100 itself, DDR's.
- **Error 16 (12V)**. This voltage is made in the power supply and results in protection (LAYER error 1 = 3) in case of absence. When SDM is activated we see blinking LED LAYER error 2 = 16.
- **Error 18 (1V2-3V3-5V too low)**. All these supplies are generated by the DC/DC supply on the SSB. If one of these supplies is too low, protection occurs and blinking LED LAYER error 1 = 2 will be displayed automatically. In SDM this gives LAYER error 2 = 18.
- **Error 19 (1V2 or class D)**. This is an combination of two detections:
  logged and displayed via the blinking LED procedure when
  - If one of the 1V2 supplies is too high or too low in the start up procedure the supply fault becomes low.
  - If a DC voltage occurs on the output of the Class D amplifier the supply fault becomes low. Be careful to overrule this protection via SDM, check audio part first before apply. **In case one of the speakers is not connected, the protection can also be triggered.**
- **Error 21 (PNX 5100)**. At the time of release of this manual, this error was not working as expected. Current situation: when this error occurs, the TV will constantly reboot. This rebooting can be recognized via a ComPair interface and Hyperterminal (for Hyperterminal settings, see section "5.8 Fault Finding and Repair Tips, 5.8.6 Logging"). It is shown that the loggings which are generated by the main software keep continuing. The best way for further diagnosis here, is to use ComPair.
- **Error 21 (PNX 5100)**. At the time of release of this manual, this error was not working as expected. Current situation: when there is no I^2C communication towards the PNX5100 after startup (power off by disconnection of the mains cord), LAYER error 2 will blink continuously via the blinking LED procedure in SDM. (startup the TV with the solder paths short to activate SDM).
- **Error 23 (HDMI)**. When there is no I^2C communication towards the HDMI mux after start up, LAYER error 2 = 23 will be logged and displayed via the blinking LED procedure if SDM is switched on.
- **Error 26 (Master IF)**. When there is no I^2C communication towards the Master IF after start up, LAYER error 2 = 26 will be logged and displayed via the blinking LED procedure when SDM is switched on.
- **Error 28 (FPGA ambilight)**. When there is no I^2C communication towards the FPGA ambilight after start up, LAYER error 2 = 28 will be logged and displayed via the blinking LED procedure if SDM is switched on. Note that it can take up several minutes before the TV starts blinking LAYER error 1 = 2 in CSM or in SDM, LAYER error 2 = 28.
- **Error 34 (Tuner)**. When there is no I^2C communication towards the tuner after start up, LAYER error 2 = 34 will be SDM is switched on.

- **Error 37 (Channel decoder DVBT)**. When there is no I²C communication towards the DVBT channel decoder after start up, LAYER error 2 = 37 will be logged and displayed via the blinking LED procedure if SDM is switched on.
- **Error 38 (STI7100)**. When there is no I²C communication towards the STI7100 after startup (power off by disconnection of the mains cord), LAYER error 2 = 38 will be logged and displayed via the blinking LED procedure in SDM (startup the TV with the solder paths short to activate SDM). Remark : if the error occurs during the ON state, the TV will constantly reboot and no LED blinking will be displayed. This rebooting can be recognized via a ComPair interface and Hyperterminal (for Hyperterminal settings, see section "5.8 Fault Finding and Repair Tips, 5.8.6 Logging"). It is shown that the loggings which are generated by the main software keep continuing. Check in the logging for keywords like e.g. "Device error 38".
- **Main NVM**. When there is no I²C communication towards the main NVM, LAYER error 1 = 2 will be displayed via the blinking LED procedure. In SDM, LAYER error 2 can be 19. Check the logging for keywords like "I²C bus blocked".
- **Error 48 (Channel decoder DVBC)**. When there is no I²C communication towards the DVBC channel decoder after start up, LAYER error 2 = 48 will be logged and displayed via the blinking LED procedure while SDM is active.
- **Error 53**. This error will indicate that the PNX8541 has read his bootscript (when this would have failed, error 15 would blink) but initialization was never completed because of hardware problems (NAND flash, ...) or software initialization problems. Possible cause could be that there is no valid software loaded (try to upgrade to the latest main software version). Note that it can take up to 2 minutes before the TV starts blinking LAYER error 1 = 2 or in SDM, LAYER error 2 = 53.

5.6 The Blinking LED Procedure

5.6.1 Introduction

The blinking LED procedure can be split up into two situations:
- Blinking LED procedure LAYER error 1. In this case the error is automatically blinked when the TV is put in CSM. This will be only one digit error, namely the one that is referring to the defective board (see table "Table 5-2 Error code overview") which causes the failure of the TV. This approach will especially be used for home repair and call centres. The aim here is to have service diagnosis from a distance.
- Blinking LED procedure LAYER error 2. Via this procedure, the contents of the error buffer can be made visible via the front LED. In this case the error contains 2 digits (see table "Table 5-2 Error code overview") and will be displayed when SDM (hardware pins) is activated. This is especially useful for fault finding and gives more details regarding the failure of the defective board.

  Important remark:
  For all errors detected by MIPS which are fatal => rebooting of the TV set (reboot starts after LAYER error 1 blinking), one should short the solder paths at start-up from the power OFF state by mains interruption and not via the power button to trigger the SDM via the hardware pins.

When one of the blinking LED procedures is activated, the front LED will show (blink) the contents of the error-buffer. Error codes greater then 10 are shown as follows:
1. "n" long blinks (where "n" = 1 to 9) indicating decimal digit
2. A pause of 1.5 s
3. "n" short blinks (where "n"= 1 to 9)
4. A pause of approximately 3 s,
5. When all the error codes are displayed, the sequence finishes with a LED blink of 3 s
6. The sequence starts again.

Example: Error 12 8 6 0 0.
After activation of the SDM, the front LED will show:
1. One long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s
2. Two short blinks of 250 ms followed by a pause of 3 s
3. Eight short blinks followed by a pause of 3 s
4. Six short blinks followed by a pause of 3 s
5. One long blink of 3 s to finish the sequence
6. The sequence starts again.

5.6.2 How to Activate

Use one of the following methods:
- **Activate the CSM**. The blinking front LED will show only the latest layer error 1, this works in "normal operation" mode or automatically when the error/protection is monitored by the standby processor. At the time of this release, this layer error 1 blinking was not working as expected.
  In case no picture is shown and there is no LED blinking, n read the logging to detect whether "error devices" are mentioned. (see section "5.8 Fault Finding and Repair Tips, 5.8.6 Logging").
- **Activate the SDM**. The blinking front LED will show the entire contents of the layer error 2 buffer, this works in "normal operation" mode or when SDM (via hardware pins) is activated when the tv set is in protection.
  Important remark:
  For all errors detected by MIPS which are fatal => rebooting of the TV set (reboot starts after LAYER error 1 blinking), one should short the solder paths at start-up from the power OFF state by mains interruption and not via the power button to trigger the SDM via the hardware pins.
- **Transmit the commands "MUTE" - "062500" - "OK" with a normal RC**. The complete error buffer is shown. Take notice that it takes some seconds before the blinking LED starts.
- **Transmit the commands "MUTE" - "06250x" - "OK" with a normal RC** (where "x" is a number between 1 and 5). When x = 1 the last detected error is shown, x = 2 the second last error, etc.... Take notice that it takes some seconds before the blinking LED starts.

5.7 Protections

5.7.1 Software Protections

Most of the protections and errors use either the stand-by microprocessor or the MIPS controller as detection device. Since in these cases, checking of observers, polling of ADCs, and filtering of input values are all heavily software based, these protections are referred to as software protections. There are several types of software related protections, solving a variety of fault conditions:
- **Protections related to supplies:** check of the 12V, +5V, +3V3 and 1V2.
- **Protections related to breakdown of the safety check mechanism.** E.g. since the protection detections are done by means of software, failing of the software will have to initiate a protection mode since safety cannot be guaranteed any more.

Remark on the Supply Errors
The detection of a supply dip or supply loss during the normal playing of the set does not lead to a protection, but to a cold reboot of the set. If the supply is still missing after the reboot, the TV will go to protection.

Protections during Start-up
During TV start-up, some voltages and IC observers are actively monitored to be able to optimise the start-up speed, and to assure good operation of all components. If these

monitors do not respond in a defined way, this indicates a malfunction of the system and leads to a protection. As the observers are only used during start-up, they are described in the start-up flow in detail (see section “5.3 Stepwise Start-up”).

5.7.2 Hardware Protections

The only real hardware protection in this chassis appears in case of an audio problem e.g. DC voltage on the speakers. The audio protection circuit pulls the “supply-fault” low and the tv set will blink LAYER error 1 = 2 or in SDM, LAYER error 2 = 19. Be very careful to overrule this protection via SDM (not to cause damage to the Class D audio amplifier). Check audio part first before activating via SDM. **In case one of the speakers is not connected, the protection can also be triggered.**

Repair Tips

- It is also possible that the set has an audio DC protection because of an interruption in one or both speakers (the DC voltage that is still on the circuit cannot disappear through the speakers). **Caution:** (Dis)connecting the speakers during the ON state of the TV can damage the audio amplifier.

5.7.3 Important remark regarding the blinking LED indication

As for the blinking LED indication, the blinking led of error layer 1 displaying can be switched off by pushing the power button on the keyboard.
This condition is not valid after the set was unpowered (via mains interruption). The blinking LED starts again and can only be switched off by unplugging the mains connection.
This can be explained by the fact that the MIPS can not load the keyboard functionality from software during the start-up and doesn’t recognizes the keyboard commands at this time.

5.8 Fault Finding and Repair Tips

Read also section “5.5 Error Codes, 5.5.4 Error Buffer, Extra Info”.

Caution: For the whole platform the speaker connections are grounded on -12 V level. During service measurements with earth grounded equipment like e.g. scope, great risk of using the speaker terminal connections for earth ground is currently present. One will short circuit the -12 V to earth ground in that way and will causes damage of the supply/audio part!

5.8.1 Ambilight

Due to degeneration process of the AmbiLights, there can be a difference in the colour and/or light output of the spare ambilight module in comparison with the originals ones contained in the TV set. Via ComPair the light output can be adjusted.

5.8.2 Audio Amplifier

The Class D-IC 7D10 has a powerpad for cooling. When the IC is replaced it must be ensured that the powerpad is very well pushed to the PCB while the solder is still liquid. This is needed to insure that the cooling is guaranteed, otherwise the Class D-IC could break down in short time.

5.8.3 CSM

When CSM is activated and there is a USB stick connected to the TV, the software will dump the complete CSM content to the USB stick. The file (Csm.txt) will be saved in the root of the USB stick. If this mechanism works it can be concluded that a large part of the operating system is already working (MIPS, USB...)

5.8.4 DC/DC Converter

Introduction

The onboard supply consists of 5 DC/DC converters and 7 linear stabilizers. The DC/DC converters have all +12V input voltage and deliver:

1. +1V2-PNX8541 supply voltage, stabilized close to PNX8541 chip.
2. +1V2-PNX5100 supply voltage, stabilized close to PNX5100 chip.
3. +3V3 (overall 3.3 V for onboard IC’s).
4. +5V for USB and Conditional Access Interface and +5V5-TUN tuner stabilizer.
5. +33VTUN for analog only tuners **(AP diversity)**.

The linear stabilizers are providing:

1. +1V supply voltage (out of +1V2-PNX8541), stabilized close to ST7101 chip **(MPEG4 diversity)**.
2. +1V8-PNX5100.
3. +1V8-PNX8541 (**reserved** because +1V8-PNX5100 used also for DDR2 interface of PNX8541 via 5FB0).
4. +2V5 (**MPEG4 diversity**).
5. +1V2-STANDBY (out of +3V3-STANDBY).
6. +5V-TUN (out of +5V5-TUN).
7. +3V3-STANDBY (out of +12V, **reserved**).

+3V3-STANDY and +1V2-STANDBY are permanent voltages. Supply voltages +1V2-PNX8541, +1V2-PNX5100 and +1V are started immediately when +12V incoming voltage is available (+12V is enabled by STANDBY signal, active low). Supply voltages +3V3, 2V5, +1V8-PNX5100, +1V8-PNX8541, +5V and +5V-TUN are switched-on directly by signal ENABLE-3V3 (active low) when +12V and previous mentioned voltages are all available.

Debugging
The best way to find a failure in the DC/DC converters is to check their starting-up sequence at power-on via the mains cord, presuming that the standby microprocessor and the external supply are operational. Take STANDBY signal high-to-low transition as reference.
When +12V rises above 10V then +1V2-PNX8541, +1V2-PNX5100 and +1V are started immediately. Then, after ENABLE-3V3 goes low, all the other supply voltages should rise within 10 ms. Boost voltages should be OK when +1V2-PNX8541, +1V2-PNX5100 are available (FU07 and FU8A, around 19V).
SUPPLY-FAULT signal should be high when all supply voltages are started-up.

Tips

- Usually, when supply voltage is short-circuited to GND, the corresponding DC/DC converter is making audible noise.
- The drop voltage across resistors 3U70 and 3U3T is 100 mV to 2000 mV.
- Defective (in short-circuit) power MOS-FET’s lead usually to their controller IC broken; if one or more high-side MOS-FET’s (7U05, 7U08, 7U0D-1 or 7U0H-1) is broken then the platform can be heavily damaged if started in SDM-mode (SUPPLY-FAULT signal is then ignored, while higher than normal supplies will be generated).
- The +33VTUN generator circuit (7U0P + 7U0Q + surrounding components) has low output current capability. In case of too low or no output voltage check transistor 7U0P (gate voltage pulses of about 10 V amplitude and drain voltage pulses of about 35 V amplitude) and the load (not more than 4.5 mA).
- High output ripple voltage of DC/DC converters can be caused by defective (cracked or bad soldered) ceramic capacitors in the feedback (DC or AC) input or output filtering.

5.8.5 Exit “Factory Mode”

When an “F” is displayed in the screen's right corner, this means that the set is in “Factory” mode, and it normally happens after a new SSB has been mounted.
To exit this mode, push the “VOLUME minus” button on the TV's keyboard control for 5 seconds and restart the set.

5.8.6 Logging

When something is wrong with the TV set (f.i.the set is rebooting) you can check for more information via the logging in Hyperterminal. The Hyperterminal is available in every Windows application via Programs, Accessories, Communications, Hyperterminal. Connect a “ComPair UART”-cable (3104 311 12742) from the service connector in the TV set to the “COM1”-port of the PC. After start-up of the Hyperterminal, fill in a name (f.i. “logging”) in the “Connection Description” box, then apply the following settings:

1. COM1
2. Bits per second = 38400
3. Data bits = 8
4. Parity = none
5. Stop bits = 1
6. Flow control = none

During the start-up of the TV set, the logging will be displayed. This is also the case during rebooting of the TV set (the same logging appears time after time). Also available in the logging is the “Display Option Code” (useful when there is no picture), look for item “DisplayRawNumber” in the beginning of the logging. Tip: when there is no picture available during rebooting you are able to check for “error devices” in the logging (LAYER 2 error) which can be very helpful to determine the failure cause of the reboot. For protection state, there is no logging.

5.8.7 Loudspeakers

Make sure that the volume is set to minimum during disconnecting the speakers in the ON-state of the TV. The audio amplifier can be damaged by disconnecting the speakers during ON-state of the set! Sometimes the set can go into protection, but that is not always the case. **Caution:** On a ME8-styling set (74xx or 76xx-range) with removed back cover the loudspeakers are automatically disconnected!

5.8.8 IPB

In case of no picture when CSM-test pattern from PNX5100 is displayed and backlight doesn’t light up, It’s recommended first to check the inverter on the IPB + wiring before replacing the hole display!

5.8.9 Sanken display supply

The 52” sets in this chassis come with a Sanken buy-in supply. When the primary circuit of the platform supply fails, there is a high possibility that the main fuse of the Sanken display supply will break. In this case the Sanken supply must not be replaced completely, just replace the Sanken main value fuse and repair the platform supply. For safety reasons, make sure to use the correct fuse type.

5.8.10 Tuner

Attention: In case the tuner is replaced, always check the tuner options!

5.8.11 UI over PCI bus

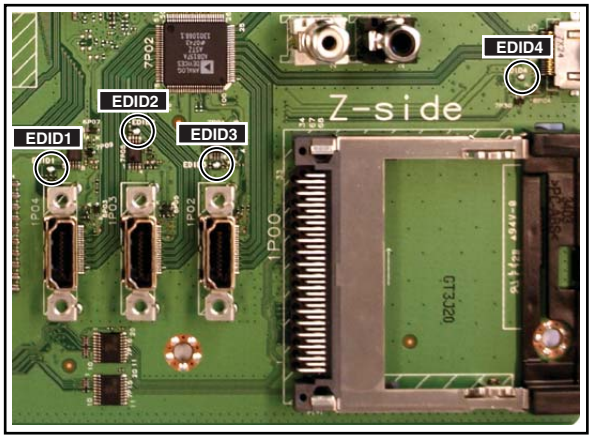
The UI is not integrated in the RGB signal but is send from PNX8541 to PNX5100 via the PCI bus. TXT and MHEG are integrated in the RGB signal. So when TXT signal is available but no UI, check the PCI bus.

5.8.12 Display option code

Attention: In case the SSB is replaced, always check the display option code in SAM, even when picture is available. Performance with the incorrect display option code can lead to unwanted side-effects for certain conditions.

5.8.13 Upgrade EDID NVM

To upgrade the EDID NVM pin 7 of the EDID NVM has to be short circuited to ground. Therefore some test points are foreseen (figure “EDID-NVM pins”). See ComPair for further instructions.



I_17660_119.eps
140308

Figure 5-13 EDID-NVM pins

5.8.14 SSB Replacement

Follow the instructions in the flowchart in case a SSB has to be exchanged. See figure “SSB replacement flowchart”.

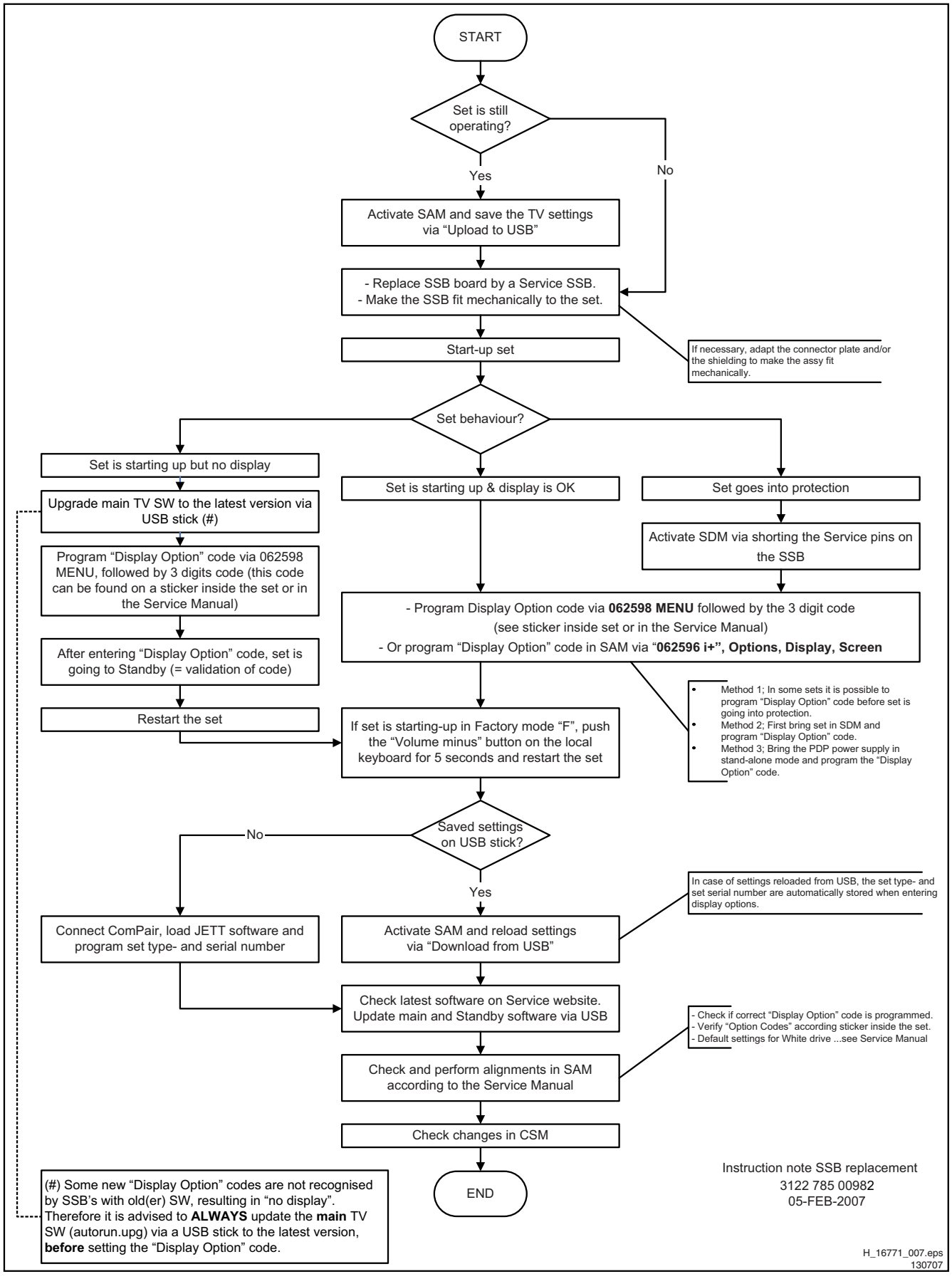


Figure 5-14 SSB replacement flowchart

5.9 Software Upgrading

5.9.1 Introduction

The set software and security keys are stored in a NAND-Flash, which is connected to the PNX8541 via the PCI bus.

It is possible **for the user** to upgrade the **main** software via the USB port. This allows replacement of a software image in a stand alone set, without the need of an E-JTAG debugger. A description on how to upgrade the main software can be found in the DFU.

Important: When the NAND-Flash must be replaced, a new SSB must be ordered, due to the presence of the security keys! (copy protection keys, MAC address, ...). It is however also possible to replace the NAND-Flash with a good one from a scrap-board.
Perform the following actions after SSB replacement:
1. Set the correct option codes (see sticker inside the TV).
2. Update the TV software (see the DFU for instructions).
3. Perform the alignments as described in chapter 8 (section "Reset of Repaired SSB").
4. Check in CSM if the HDMI keys are valid.

For the correct order number of a new SSB, always refer to the Spare Parts list!

5.9.2 Main Software Upgrade

- The "UpgradeAll.upg" file is only used in the factory.
- The "FlashUtils.upg" file is only used by service centra which are allowed to do component level repair on the SSB.

Automatic Software Upgrade
In "normal" conditions, so when there is no major problem with the TV, the main software and the default software upgrade application can be upgraded with the "AUTORUN.UPG" (FUS part of the one-zip file: e.g. 3104 337 04731 _FUS _Q591E_ 1.25.5.0_commercial.zip). This can also be done by the consumers themselves, but they will have to get their software from the commercial Philips website or via the Software Update Assistant in the user menu (see DFU). The "autorun.upg" file must be placed in the root of the USB stick.
How to upgrade:
1. Copy "AUTORUN.UPG" to the root of the USB stick.
2. Insert USB stick in the set while the set is in ON MODE. The set will restart and the upgrading will start automatically. As soon as the programming is finished, a message is shown to remove the USB stick and restart the set.

Manual Software Upgrade
In case that the software upgrade application does not start automatically, it can also be started manually.
How to start the software upgrade application manually:
1. Disconnect the TV from the Mains/AC Power.
2. Press the "OK" button on a Philips TV remote control or a Philips DVD RC-6 remote control (it is also possible to use a TV remote in "DVD" mode). Keep the "OK" button pressed while reconnecting the TV to the Mains/AC Power.
3. The software upgrade application will start.

Attention!
In case the download application has been started **manually**, the "autorun.upg" will maybe not be recognized.
What to do in this case:
1. Create a directory "UPGRADES" on the USB stick.
2. Rename the "autorun.upg" to something else, e.g. to "software.upg". Do not use long or complicated names, keep it simple. Make sure that "AUTORUN.UPG" is no longer present in the root of the USB stick.
3. Copy the renamed "upg" file into this directory.
4. Insert USB stick into the TV.
5. The renamed "upg" file will be visible and selectable in the upgrade application.

Back-up Software Upgrade Application
If the default software upgrade application does not start (could be due to a corrupted boot 2 sector) via the above described method, try activating the "back-up software upgrade application".
How to start the "back-up software upgrade application" manually:
1. Disconnect the TV from the Mains/AC Power.
2. Press the "INFO"-button on a Philips remote control or "CURSOR DOWN" button on a Philips DVD RC-6 remote control (it is also possible to use a TV remote in "DVD" mode). Keep the "INFO"-button (or "cursor down" button) pressed while reconnecting the TV to the Mains/AC Power.
3. The software upgrade application will start.

5.9.3 Stand-by Software Upgrade via USB

In this chassis it is possible to upgrade the Stand-by software via a USB stick. The method is similar to upgrading the main software via USB.
Use the following steps:
1. Create a directory "UPGRADES" on the USB stick.
2. Copy the Stand-by software (part of the one-zip file, e.g. StandbySW_CFT55_35.0.0.0.upg) into this directory.
3. Insert the USB stick into the TV.
4. Start the download application manually (see section " Manual Software Upgrade".
5. Select the appropriate file and press the "red" button to upgrade.

5.9.4 Content and Usage of the One-Zip Software File

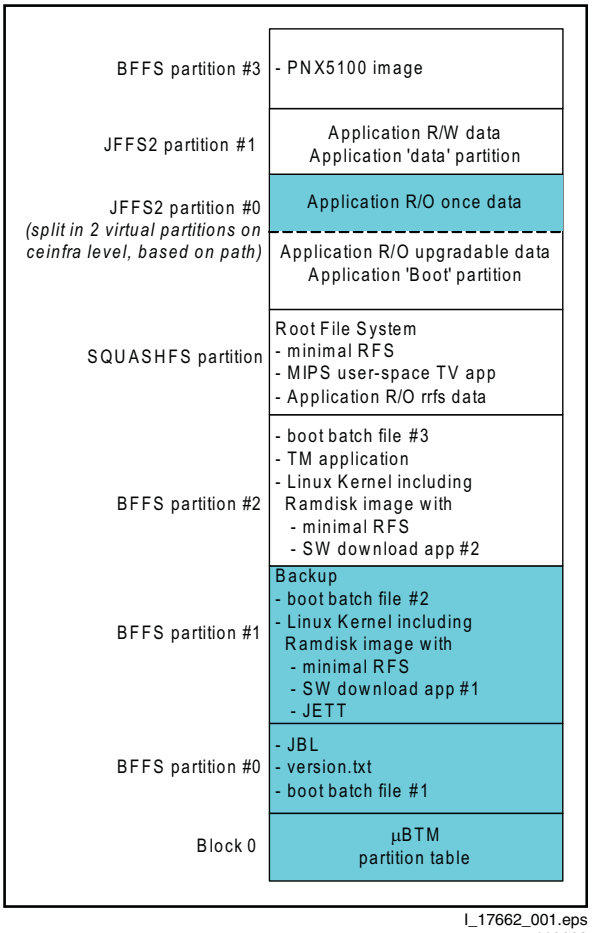
Below the content of the One-Zip file is explained, and instructions on how and when to use it.

- **1.1 Ambilight_PRFAM_x.x.x.x.zip.** Not to be used by Service technicians.
- **1.2 bootProm_PNX5100_Q591X_x.x.x.x.zip.** A programmed device can be ordered via the regional Service organization.
- **1.3 Cabinet_ACOUS_x.x.x.x.zip**. Not to be used by Service technicians.
- **1.4 Ceisp2padll_P2PAD_x.x.x.x.zip.** Not to be used by Service technicians. For ComPair development only.
- **1.5 DDC_Q591X_x.x.x.x.zip.** Contains the content of the VGA NVM. See ComPair for further instruction.
- **1.6 Display_DISPT_x.x.x.x.zip**. Not to be used by Service technicians.
- **1.7 EDID_Q591X_x.x.x.x.zip.** Contains the EDID content of the different EDID NVM's. See ComPair for further instructions.
  For sets with four HDMI connectors.
  - For **HDMI 1** NVM, use "*port 1*.bin"
  - For **HDMI 2** NVM, use "*port 2*.bin"
  - For **HDMI 3** NVM, use "*port 3*.bin"
  - For **HDMI 4** NVM, use "*port 4*.bin"
- **1.8 EJTAGDownload_Q591X_x.x.x.x.zip.** Only used by service centra which are allowed to do component level repair.
- **1.9 Factory_Q591X_x.x.x.x_commercial.zip.** Only for production purposes, not to be used by Service technicians.
- **2.0 FlashUtils_Q591X_x.x.x.x_commercial.zip.** Not to be used by Service technicians.
- **2.1 LightGuide_TV522_x.x.x.x_.zip.** Not to be used by Service Technicians.
- **2.2 FUS_Q591X_x.x.x.x_commercial.zip.** Contains the "autorun.upg" which is needed to upgrade the TV main software and the software download application.

- **2.3 MOP_RXSXX_x.x.x.x.zip.** A separate MOP Ambient Light FPGA SW. This SW is not part of the FUS autorun.upg! A programmed MOP device can also be ordered via the regional Service organization.
- **2.4 OAD_Q591X_x.x.x.x.zip.** Not to be used by Service Technicians.
- **2.45OpenSourceFile_Q591X_x.x.x.x.zip.** Not to be used by Service technicians.
- **2.6 PQPrivate_U5228_x.x.x.x.zip.** Not to be used by Service technicians.
- **2.7 PQPublic_U5228_x.x.x.x.zip.** Not to be used by Service technicians.
- **2.8 ProcessNVM_Q591X_x.x.x.x.zip.** Default NVM content. Must be programmed via ComPair.
- **2.9 StandbySW_CFTxx_x.x.x.x_commercial.zip.** Contains the Stand-by software in “upg” and “hex” format.
  - The “StandbySW_xxxxx_prod.upg” file can be used to upgrade the Stand-by software via USB.
  - The “StandbySW_xxxxx.hex” file can be used to upgrade the Stand-by software via ComPair.
  - The files “StandbySW_xxxxx_exhex.hex” and “StandbySW_xxxxx_dev.upg” may not be used by Service technicians (only for development purposes).
- **3.0 stmp4_xxxx.xxxx.xxxx.zip.** This is a separate MPEG4 SW (is also part of the FUS autorun.upg). Not to be used by Service Technicians.
- **3.1 UpgradeAll_Q591X_x.x.x.x_commercial.zip.** Only for production purposes, not to be used by Service technicians.
  Caution: Never try to use this file, because it will overwrite the HDCP keys ! ! !
- **3.2 UpgradeExe_Q591X_x.x.x.x.zip.** Not to be used by Service Technicians.

5.9.5 Explanation UART log

What's inside the flash of a TV set



I_17662_001.eps
110608

Figure 5-15 Sections in a flash device

Explanation of the sections
The flash of TV520 sets consists of a boot-block (block 0), a number of BFFS (Boot Flash File System) partitions, one SquashFS (compressed read-only filesystem for Linux. SquashFS is intended for general read-only filesystem use, for archival use) partition and a number of JFFS (Journaling Flash File System) partitions. The BFFS partitions contain the program code and compile-time data. The SquashFS partition contains the Linux rootfs including the standard RFS (Root File System) directory structures (dev,lib, modules, …) and MIPS executables (elf).
For the purpose of SWUPG (SoftWare UPGrade application) the following points are important:

- The boot-block (block 0) contains also the partition table. This table indicates which partitions there are on this system and where they are located on the flash. All programs that want to access the flash contents should use this table.
- At system start-up the BTM (Boot Manager) loads the JBL (Jaguar Boot Loader) from /bffs0. The JBL then starts interpreting the boot.bat file from the highest available BFFS partition. If no boot.bat is found there, the next lower partition is tried.
- /bffs1 partition contains:
  1. kernel image.
  2. ramdisk image of RFS holding bare minimum (no debug tooling), including mod/libs , the SW backup upgrade executable, the Jett executable and the helper executable (init + MTD utils used to flash).
  3. boot batch file.
- The backup SWUPG is stored in the /boot1 BFFS partition in the factory, together with a boot.bat that by defaults loads this SWUPG. This way the set will always load this SWUPG if nothing is in /bffs2.
- /bffs2 partition contains:
  1. kernel image.
  2. ramdisk image of RFS holding bare minimum (no debug tooling), including mod/libs , the SW backup upgrade executable and the helper executable (init + MTD utils used to flash).
  3. TM image.
  4. boot batch file.
- In /boot2 an additional SWUPG shall always be written, either in the factory or by the end-user through an upgrade, which will overrule the one in /boot1. Here also the TM image is stored and a boot.bat which by default loads the main TV application, but falls back on the /boot2/SWUPG if that fails.
- /bffs3 partition contains PNX5100 images.
- In SquashFS, the TV application RFS flashed as a partition image. Content identical to the RAMDISK RFS at the exception that it includes the TV application in stead of SWUPG.
- JFFS2 partition0 contains the R/O once data, which can only written be written in the factory.
- JFFS2 partition1 contains the R/W data.

Startup sequence TV
The UART doesn't show the standby output.

```
U¤Uretail Jan 16 2008 12:03:04                                  _____> µBTM startup
Boot deviceST NAND512W3A
BFFS init
OK
Searching BootLoader.tdfLoad  /bffs0/BootLoader.tdf- Done       _____> Bootloader startup
Start /bffs0/BootLoader.tdf
JBL (boottime improvement
BootLoader OS_R0.7.2assert Feb 25 2008 12:49:28Searching boot.bat
Execute /bffs2/boot.bat from label [4]                          _____> Application selection startup (SWUPG on bffs2)
* SR4->USB SW DL boot2
* On error goto 6
* Load /bffs2/Kernel.tdf - ok
* Load /bffs2/RFSBoot2.tdf - ok
* MemFill 0x87fff000 0x1000 0xff
* Signal 30
* Cmd Line
CMD_LINE arguments passed by JBL :  console=ttyS0,38400n8 mem=60M kgdb=ttyS1 l
oglevel=3 init=/init ip=none jffs2_gc_delay=0 root=/dev/ram lpj=1196032 rd_sta
rt=0x80500000 rd_size=1568768* Start /bffs2/Kernel.tdf"htv520EU/92 startup script ..."
"Mounting file systems"
Total usertime mount for   /proc: 0,000000 [Sec]
Total systemtime mount for /proc: 0,000000 [Sec]
Total usertime mount for   /sys: 0,000000 [Sec]
Total systemtime mount for /sys: 0,010000 [Sec]
Total usertime mount for   /dev/shm: 0,000000 [Sec]
Total systemtime mount for /dev/shm: 0,000000 [Sec]
Total usertime mount for   /dev/pts: 0,000000 [Sec]
Total systemtime mount for /dev/pts: 0,000000 [Sec]
"Loading PNX5100 Image"
"Launching SW Download Application From Boot2"                  _____> extra information telling which application is started up
checking hotboot: NO
Standby version 40.x.0.0
start_Init clearing m_InitDoneBlunk
Using errlib version 0.9
Errlib 0.9 registered from process 147
3533 - ReferenRW partition: 4
 mounting partition 4 to jffs2 file system passed RW partition: 5
 mounting partition 5 to jffs2 file system passed
mounted: </dev/mtdblock6>
Mount check passes,  0 iterations
                    mounted: </dev/mtdblock7>
Mount check passes,  0 iterations
                    pffsN_OnMounted sets m_InitDoneBlunk to true
InitCehtvData done
          ReadCehtvData ConfigVersion: [0.01] OK
                                ReadCehtvData ProductID: [Q591E] OK
       ReadCehtvData OUI: [0000903E] OK
                          ReadCehtvData HardwareModel: [0203] OK
  ReadCehtvData HardwareVersion: [0100] OK
                          ConvertAscii2Bin started
ConvertAscii2Bin done
ConvertAscii2Bin started
ConvertAscii2Bin done
ReadCehtvData PublicKey: OK
ReadCehtvData done, ConfigOK: TRUE
Could allocate 36701184.                                        _____>The amount of memory free to load the upg into. If upg size >
                                                                free memory, upg will not be programmed

redirecting 1 to 20
00 005.151 Startup m_InitDoneBlunk: 1,   m_InitDoneMain: 1
00 005.151  /mnt/jffs0/rupg/tvplf/cetv/display found - Layoutcheck OK
00 005.151  Display flash file : Layout version = 8 ; Content version = 17
00 005.151  Display flash file : Project Id = 1 ; Branch Id = 0
00 005.151  version string:     DISPT_001.000.008.017
00 005.151  Using screen option 142, name LCD LGD WUF SAA1 42"
00 005.151 MMIO address obtained from pnx5xxx drv = 0x28000000
00 005.151 redirecting 2 to 23
00 005.164 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnk
nownAttachedError, -1 )" notification given
00 005.165 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnk
nownAttachedError, -1 )" notification given
00 005.167 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnk
nownAttachedError, -1 )" notification given
00 005.169 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnk
nownAttachedError, -1 )" notification given
00 005.171 ***GVC: T2 - ceisusb_m.c (817): "usbdevspN_OnPhysicalDeviceConnecte
d( 0 )" notification given...
00 005.310 startr_init
00 005.310 Startup m_InitDoneBlunk: 1,   m_InitDoneMain: 1
00 005.413 gfxptr: 2dea0000
00 005.413 malloc 776605704
00 005.413  Starting STi710x device with i2c protocol version v0.5 !
00 005.413  ST TurnOn first attemptS18,0,Q591E_0.39.0.0
00 005.751 Go!!!!!!!
00 005.850  Por: 1
00 005.860  ST start up OKST SW Version: MPEG4.001.000.000.029
00 005.870 ST HW Version: MP4HW.000.000.012.002
00 005.872 Amount of upgs on usb 0
00 005.874 No upg files found!
00 009.182 ***GVC: T2 - ceisusb_m.c (1199): "usbdevspN_OnNewDevice( 0 )" notification given.
00 009.271 ***GVC: T2 - ceisusb_m.c (1408): "usbdevspN_OnDriveMounted( 0 )" notification given
00 009.273 OnDriveMounted : 0
00 009.559 ceapps OnUpgradesChanged : 0
00 009.567 Amount of upgs on usb 20

---------- Here Application is started up ----------

00 009.772 20 upgs found on USB. Press right to enter the list.  _____>Amount of upgs found.
```

I_17662_002.eps
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Figure 5-16 Example UART log during SWUPG startup (DVD OK).

```
UªUretail Jan 16 2008 12:03:04
Boot deviceST NAND512W3A
BFFS init
OK
Searching BootLoader.tdfLoad  /bffs0/BootLoader.tdf- Done
Start /bffs0/BootLoader.tdf
JBL (boottime improvement
BootLoader OS_R0.7.2assert Feb 25 2008 12:49:28Searching boot.bat
Execute /bffs2/boot.bat from label [6]
unknown command, line 302
Execute /bffs1/boot.bat from label [6]
* boot1: SR6->USB SW DL boot1
* On error goto 70
* Load /bffs1/Kernel.tdf - ok
* Load /bffs1/RFSBoot1.tdf - ok
* MemFill 0x87fff000 0x1000 0xff
* Signal 30
* Cmd Line
CMD_LINE arguments passed by JBL :  console=ttyS0,38400n8 mem=60M kgdb=ttyS1 loglevel=3 init=/init ip=none root=/dev/ram lpj=1196032 rd_start=0x80500000 rd_
size=1818624* Start /bffs1/Kernel.tdf"htv520EU/92 startup script ..."
"Mounting file systems"
Total usertime mount for   /proc: 0,000000 [Sec]
Total systemtime mount for /proc: 0,000000 [Sec]
Total usertime mount for   /sys: 0,000000 [Sec]
Total systemtime mount for /sys: 0,000000 [Sec]
Total usertime mount for   /dev/shm: 0,000000 [Sec]
Total systemtime mount for /dev/shm: 0,000000 [Sec]
Total usertime mount for   /dev/pts: 0,000000 [Sec]
Total systemtime mount for /dev/pts: 0,000000 [Sec]
"Loading PNX5100 Image"
"Launching SW Download Application From Boot1"
checking hotboot: NO
Standby version 40.x.0.0
start_Init clearing m_InitDoneBlunk
Using errlib version 0.9
Errlib 0.9 registered from process 147
3562 - ReferenRW partition: 4
  mounting partition 4 to jffs2 file system passed
RW partition: 5
  mounting partition 5 to jffs2 file system passed
mounted: </dev/mtdblock6>
Mount check passes,  0 iterations
  mounted: </dev/mtdblock7>
Mount check passes,  0 iterations
  pffsN_OnMounted sets m_InitDoneBlunk to true
InitCehtvData done
  ReadCehtvData ConfigVersion: [0.01] OK
  ReadCehtvData ProductID: [Q591E] OK
  ReadCehtvData OUI: [0000903E] OK
  ReadCehtvData HardwareModel: [0203] OK
  ReadCehtvData HardwareVersion: [0100] OK
ConvertAscii2Bin started
  ConvertAscii2Bin done
ConvertAscii2Bin started
  ConvertAscii2Bin done
  ReadCehtvData PublicKey: OK
  ReadCehtvData done, ConfigOK: TRUE
Could allocate 36701184.
Startup m_InitDoneBlunk: 1,   m_InitDoneMain: 1
  /mnt/jffs0/rupg/tvplf/cetv/display found - Layoutcheck OK
Display flash file : Layout version = 8 ; Contentversion = 17
Display flash file : Project Id = 1 ; Branch Id = 0
  version string:     DISPT_001.000.008.017
Using screen option 142, name LCD LGD WUF SAA1 42"
MMIO address obtained from pnx5xxx drv = 0x28000000
redirecting 1 to 22
00 005.181 redirecting 2 to 23
00 005.185 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 005.187 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 005.188 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 005.190 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 005.192 ***GVC: T2 - ceisusb_m.c (817): "usbdevspN_OnPhysicalDeviceConnected( 0 )" notification given...
00 005.364 startr_init
00 005.364 Startup m_InitDoneBlunk: 1,   m_InitDoneMain: 1
00 005.465 gfxptr: 2dea0000
00 005.465 malloc 776605704
00 005.465  Starting STi710x device with i2c protocol version v0.5 !
00 005.471  ST TurnOn first attemptS18,0,Q591E_0.39.0.0
00 005.806 Go!!!!!!!
00 005.910  Por: 1
00 005.920  ST start up OKST SW Version: MPEG4.001.000.000.029
00 005.930 ST HW Version: MP4HW.000.000.012.002
00 005.932 Amount of upgs on usb 0
00 005.934 No upg files found!
00 009.212 ***GVC: T2 - ceisusb_m.c (1199): "usbdevspN_OnNewDevice( 0 )" notification given.
00 009.297 ***GVC: T2 - ceisusb_m.c (1408): "usbdevspN_OnDriveMounted( 0 )" notification given
00 009.299 OnDriveMounted : 0
00 009.586 ceapps OnUpgradesChanged : 0
00 009.594 Amount of upgs on usb 20
00 009.854 20 upgs found on USB. Press right to enter the list.
```

I_17662_003.eps
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Figure 5-17 Example UART log during SWUPG startup (DVD down).

```
UªUretail Jan 16 2008 12:03:04
Boot deviceST NAND512W3A
BFFS init
OK
Searching BootLoader.tdfLoad  /bffs0/BootLoader.tdf- Done
Start /bffs0/BootLoader.tdf
JBL (boottime improvement
BootLoader OS_R0.7.2assert Feb 25 2008 12:49:28Searching boot.bat
Execute /bffs2/boot.bat from label [1]
* SR1->Coldboot
* On error goto 60
* Load /bffs2/atvTm0App.tdf - ok
* Load /bffs3/tmpvbPnx51xxApp.tdf - ok
* Load /bffs2/cdDownloadTM0.tdf - ok
* Starting earlyStartTM* Load /bffs3/tmvprPnx51xxCoApp_tm2.tdf - ok
* Load /bffs3/tmvprPnx51xxCoApp_tm3.tdf - ok
* Load /bffs2/Kernel.tdf - ok
* MemFill 0x87fff000 0x1000 0xff
* Signal 30
* Cmd Line
CMD_LINE arguments passed by JBL :  console=ttyS0,38400n8 mem=48M kgdb=ttyS1 l
oglevel=3 root=/dev/mtdblock5 lpj=1196032 init=/init ip=none jffs2_gc_delay=30
* Start /bffs2/Kernel.tdf"htv520EU/92 startup script ..."
"Mounting file systems"
Total usertime mount for   /proc: 0,000000 [Sec]
Total systemtime mount for /proc: 0,000000 [Sec]
Total usertime mount for   /sys: 0,000000 [Sec]
Total systemtime mount for /sys: 0,000000 [Sec]
Total usertime mount for   /dev/shm: 0,000000 [Sec]
Total systemtime mount for /dev/shm: 0,000000 [Sec]
Total usertime mount for   /dev/pts: 0,000000 [Sec]
Total systemtime mount for /dev/pts: 0,010000 [Sec]
"Mounting the flash file systems"
Total usertime mount for   /mnt/jffs0: 0,000000 [Sec]                    _______> Mount time for JFFS partitions
Total systemtime mount for /mnt/jffs0: 0,080000 [Sec]
"Loading PNX5100 Image"
"Launching TV application"
---------------------------------------- Here TV Application is starting up ----------------------
Using errlib version 0.9
Errlib communication with plfapp failed, will retry later
redirecting 1 to 14
00 002.414 128MB memory on board
00 002.414 128MB memory MAP
00 002.414 checking hotboot: NO
00 002.414 Standby version 40.x.0.0
00 002.414 start_Init clearing m_InitDoneBlunk
00 002.414 Using errlib version 0.9
00 002.414 Errlib 0.9 registered from process 118
00 002.414 2343 - Reference timestamp
00 002.414 mounted: </dev/mtdblock6>
00 002.414 Mount check passes,  0 iterations
-1 002.517 (*) FusionDale/Config: Parsing config file '/etc/fusiondalerc'.
-1 002.517     *----------) FusionDale v0.1.1 (----------*
-1 002.517               (c) 2006-2007  directfb.org
-1 002.517       ------------------------------------------------
-1 002.517 (*) Fusion/SHM: NOT using MADV_REMOVE (2.6.18.0 < 2.6.19.2)! [0x02061200]
-1 002.517 (*) Direct/Thread: Running 'Fusion Dispatch' (MESSAGING, 119)...
-1 002.527 redirecting 2 to 12
-1 002.527 starting :  /philips/apps/ceplfapp
-1 002.527 amApp : InitFusionDale
-1 002.527 Errlib communication with plfapp failed, will retry later
00 002.639  /mnt/jffs0/rupg/tvplf/cetv/display found - Layoutcheck OK
00 002.639  Display flash file : Layout version = 8 ; Content version = 17
00 002.639  Display flash file : Project Id = 1 ; Branch Id = 0
00 002.639  version string:     DISPT_001.000.008.017
00 002.639  Using screen option 142, name LCD LGD WUF SAA1 42"Errlib 0.9 registered from process 116
00 002.695     *----------) FusionDale v0.1.1 (----------*
00 002.695               (c) 2006-2007  directfb.org
00 002.695       ------------------------------------------------
00 002.802 Diversity: BoardType=/92, BoardVersion=3, Detected pnx8535 version=M2
00 002.802 AmbientLightGenerator       : Epld
00 002.802 AmbientLightMode            : LeftRight
00 002.802 AmbientLightTechnology      : Led
00 002.802 CabinetNumber               : 3
00 002.802 ChannelDecoderType          : Tda10048
00 002.802 ChannelDecoder2Type         : Tda10023
00 002.802 ClearLcdSupported           : False
00 002.802 DimmingBacklightSupported   : True
00 002.802 DisplayDelayCompensation    : 36 - 190
00 002.802 DisplayRawNumber            : 142
00 002.802 DvbHdSupported              : False
00 002.802 EpldPresent                 : True
00 002.802 HDMIMuxPresent              : Mux4
00 002.802 IfDemVersion                : V2
00 002.802 LightSensor                 : Present
00 002.802 LightSensorType             : Aura
00 002.802 Sti7100Present              : True
00 002.802 PacificPresent              : False
00 002.802 Region                      : Europe
00 002.802 Pnx5050Present              : False
00 002.802 Pnx5100Present              : True
00 002.802 SawVersion                  : New
00 002.802 IF Mode (DVB-C)             : Direct IF
00 002.802 TunerI2cConfig              : ViaChannelDecoder
00 002.802 TunerType                   : 26 (Phil4MkTd1716F)
-1 002.916 amApp: Platform returned wakeup reason [src: 0, sys: 0, cmd: 0]
-1 002.919 starting :  /philips/apps/tveu 4 0 0
00 003.082  RU Flash file not found in /mnt/jffs0/rupg/tvplf/tv520avi/cabinet3
```

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Figure 5-18 Example UART log during SWUPG startup (Normal startup) part 1.

```
00 003.082  RO Flash file not found in /mnt/jffs0/ro/tvplf/tv520avi/cabinet3
00 003.082  Local flash file not found in file/cabinet3
00 003.082  RU Flash file found in /mnt/jffs0/rupg/tvplf/tv520avi/cabinet
00 003.082  Cabinet flash file : Layout version = 4 ; Content version = 16
00 003.082  Cabinet flash file : Project Id = 0 ; Branch Id = 39
00 003.082  version string:     ACSTS_000.039.004.016
-1 003.182 amApp : InitDirectFB
-1 003.182 Grabbing keyboard
-1 003.182 amApp : InitSaWMan
-1 003.182 AppMan: Process added (118) [1]!
-1 003.182 AppMan: Process added (116) [2]!
-1 003.182 AppMan: Window added (0,0-1x1) [1] - 1!
00 003.304  Using cabinet option 3, name MS7_speaker_B 2K7
00 003.304  /mnt/jffs0/rupg/tvplf/cetv/pqprivate found
00 003.304  PQ private flash file : Layout version = 8 ; Content version = 0
00 003.304  PQ private flash file : Project Id = 1 ; Branch Id = 0
00 003.304  version string:     PRFPV_001.000.008.000
00 003.304  /mnt/jffs0/rupg/tvplf/cetv/ambientlight found
00 003.304  Ambientlight flash file : Layout version = 3 ; Content version = 9
00 003.304  Ambientlight flash file : Project Id = 1 ; Branch Id = 0
00 003.349  version string:     PRFAM_001.000.003.009i5100pow_Init
00 003.382
00 003.382  /mnt/jffs0/rupg/tvplf/cetv/pqpublic found
00 003.382  PQ public flash file : Layout version = 4 ; Content version = 2
00 003.382  PQ public flash file : Project Id = 0 ; Branch Id = 0
00 003.406  version string:     PRFPB_000.000.004.002plfdmx_mdmx: DEBUG_ERROR_PRINT enabled
00 003.431 Platform Application from Apr 13 2008 22:31:30,
00 003.431      built on PC: BEQBRGBRG1TSS15 by user: beq00908
00 003.431      CCM_build_id:
00 003.431 Startup m_InitDoneBlunk: 0,   m_InitDoneMain: 1
00 003.782 Check TM download idrv_DspReady_Ready
01 003.879 tvApp : entered main....
01 003.885 amApp is passing 4 arguments
01 003.890 tvApp : Param 1 = 4 Param 2 = 0
01 003.892  Tvmain: start_Init called
00 003.974 Create Thread with priority 70 (=45)
00 003.974 Create Thread with priority 70 (=45)
00 003.974 Create Thread with priority 70 (=45)
00 003.974 Create Thread with priority 70 (=45)
00 003.974 Create Thread with priority 70 (=45)
00 003.974 Create Thread with priority 70 (=45)
01 003.985 Using errlib version 0.9
00 003.988  Starting STi710x device with i2c protocol version v0.5 !
00 003.995  ST TurnOn first attemptCreate Thread with priority 70 (=45)
00 003.995 Create Thread with priority 70 (=45)
00 003.995 Create Thread with priority 70 (=45)
00 003.995 Create Thread with priority 70 (=45)
00 004.004 PNX5100: Using PCI communication for all i2c write messsages!!
00 004.007 PNX5100: Input Wdw: 1944 1104 Output Freq: 100
00 004.009 PNX5100: Input Wdw: 1944 1104 Output Freq: 120
00 004.013 Create Thread with priority 70 (=45)
00 004.015 PNX5100: Hardware Id [5100hwid]
00 004.017          Software Id [20080408]
00 004.019          BootNvm Id [   8]
00 004.023 5100 Drv GetBootstatus via PCI : 0
00 004.038 Errlib 0.9 registered from process 164
00 004.064 TM download OK
01 004.067 (*) FusionDale/Config: Parsing config file '/etc/fusiondalerc'.
01 004.072      *----------) FusionDale v0.1.1 (----------*
01 004.072                (c) 2006-2007  directfb.org
01 004.072       ----------------------------------------------------
01 004.078 (*) Fusion/SHM: NOT using MADV_REMOVE (2.6.18.0 < 2.6.19.2)! [0x02061200]
01 004.089 (*) Direct/Thread: Running 'Fusion Dispatch' (MESSAGING, 184)...
00 004.099  Por: 1
00 004.102  ST start up OKST SW Version: MPEG4.001.000.000.029
00 004.105 ST HW Version: MP4HW.000.000.012.002
00 004.107 5100 Drv GetBootstatus via PCI : 0
00 004.112 Firmware version 3.10 for TDA10048 succesfully downloaded
00 004.263 5100 Drv GetBootstatus via PCI : 2
00 004.265 PNX5100&&&&&& Bootstatus on 2 after 2 retries
-1 004.333 AppMan: Process added (164) [3]!
00 004.445 i5100pow_TurnOn
00 004.451 phatvEngine5100Proxy__pow_TurnOn using udma driver for autotv !!gOemRegTbl:0x3292D0
00 004.508 cetvbend_mpowon: iambl_SetState onoff = 0
-1 004.517 icplfapisetup_powN_OnTvPowerChanged for state 2
01 004.702 svspow_m.c:2922::Start Init of svspow called.MsecSinceInit: 1791999581
01 004.707 svspow_m.c:2251::Wakeup Reason is coldboot
01 004.730 svspow_m.c:2954::Quick Turn On Initiated
01 004.730 svspow_m.c:1380::Double call in InitialiseSoftware
-1 004.804 AppMan: Window added (100,100-480x300) [2] - 0!
-1 004.804 Border window attached
-1 004.804 AppMan: Switch focus to 0x5132da00 [2]
-1 004.804 AppMan: Window added (100,100-480x300) [3] - 1!
-1 004.804 Audio node attached
-1 004.813 amApp: dst setup called for 2
-1 004.820 amApp: Enabling keyboard
-1 004.823 amApp: dst setup called for 3
01 004.975 FUNCTION:hsveuins__impow_Init, LINE:216, InsStatus.Medium:255
01 004.987 MAINVIDEOWINDOW=2,sizeof(NoClearData):8,retval:0,retval1:0
00 005.060  UNBLOCK CARD
01 005.203 svspow_m.c:1526::All Subsystems inited
01 005.236 mlock patch inited
-1 005.262 HK_REQUEST_PS received for 5
-1 005.262 Ungrabbing keyboard
01 005.267 svspow_m.c:2854::REQUEST_PS for cmd: 5
00 005.270 cetvbend_mpowon: powon_TurnOn
01 005.289 <5>     5278 ZAP_END - UnBlank GCK**********Hot key received by tvApp
01 005.289 svspow_m.c:4705::HK_PREPARE_PS received for cmd = 5
01 005.289 GCK**********Hot key prepare PS received by psc
01 005.289 svspow_m.c:4049::powctl_SetPowerMode to PscPowOn
-1 005.296 Called icplfapisetup_pow_SetTvPower( 3 )
```

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Figure 5-19 Example UART log during SWUPG startup (Normal startup) part 2.

```
-1 005.296 Sending HK_PREPARE_PS to application index 1, window 0x5132da00
01 005.315 svspow_m.c:1575::Reached SW Turn On 1
-1 005.327 icplfapisetup_powN_OnTvPowerChanged for state 3
01 005.338 svspow_m.c:1634::Reached HandleTurnOn1Event with Event = 16
01 005.342 svspow_m.c:1634::Reached HandleTurnOn1Event with Event = 1
01 005.432 RB Analog file name /mnt/jffs0/boot/tv/hysvc/HsvAntennaAnalogTable
01 005.435 RB Digts file name /mnt/jffs0/boot/tv/hysvc/HsvAntennaDigPtcTable
01 005.437 RB digsrvc file name /mnt/jffs0/boot/tv/hysvc/HsvAntennaDigSrvcTable
01 005.439 FrequecnyMap file name /mnt/jffs0/boot/tv/hysvc/HsvAntennaFreqMapTable
01 005.443 Analog file::IsImmediateFlashUpdateReqd set to:0
01 005.444 RB Analog file open Sucessfull
01 005.446 Proceed1:1
01 005.448 generating dig tables
01 005.452 digts_Open ::DigTsfp:18157056,tempval2:2
01 005.454 digts::IsImmediateFlashUpdateReqd set to:0
01 005.464  digsrvc_Open::DigSrvcfp:18157424,tempval:2
01 005.466 DigSrvcfp::IsImmediateFlashUpdateReqd set to:0
01 005.469  freqmap_Open::freqMapfp:18157792,tempval:2
01 005.471 freqMapfp::IsImmediateFlashUpdateReqd set to:0
01 005.475 ANTENNA_FLASH_ANALOG_TABLE: records:21
01 005.478 NoOfRecordsInFlash::ANTENNA_FLASH_DIG_PTC_TABLE:12
01 005.512 NoOfRecordsInFlash::ANTENNA_FLASH_DIG_SRVC_TABLE:117
01 005.514 NoOfRecordsInFlash::ANTENNA_FLASH_FREQMAP_TABLE:0
01 005.516 RB Analog file closed
00 005.519 cetvbend_mpowon: cetvambi_ambilight_Disable
01 005.526 CurrentONID = 9018
01 005.528 euins_m:Medium from NVM = 0
01 005.544 svspow_m.c:3586::cesvc powntf received for Ssby
01 005.546 svspow_m.c:1634::Reached HandleTurnOn1Event with Event = 2
01 005.573 svspow_m.c:750::Set has reached Semisby state
00 005.577 cetvbend_mpowon: iambl_SetState onoff = 0
01 005.582 cbmhgoad_mcallisto: mDownloadErrorOccured = FALSE
01 005.584 cbmhgoad_mswupdt: mScanningRequired = FALSE - mMsgArrived = 0, MsgType = 65535
01 005.586 cbmhgpow_mpow: sbyoad_IsPending = FALSE
01 005.590 svspow_m.c:1718::Reached SW Turn On 2
00 005.704 cetvbend_mpowon: iambl_SetState onoff = 0
01 005.784 cbmhgpow_mpow: selrqd_IsProgSelReqd = TRUE
01 005.792 <5>     5792 ZAP_BEGIN - SelectProgram
01 005.794 svspow_m.c:953::First Preset Seln made at 1792000672
01 005.827  svbas pgselN_OnProgramChangeRequested
00 005.844 DVB-T decoder selected
00 005.846 avptda10023_menable.c: ena_Disable()
01 005.896 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 1
00 006.059 ***Restoring Ad Routing and enable direct control
01 006.162 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 16
01 006.195 svspow_m.c:3634::cesvc powntf received for ON
01 006.197 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 2
00 006.211 ***Writing the Ad Routing parameters...
00 006.464 tmtv520avinst__vipN_OnImageFormatChanged
01 006.752  hsvprins: hsvprins__feapiN_OnStationFound
01 006.936 hsveuins_mdig.c: 2178: hsveuins__ictrlN_OnEvent:
01 006.936 sigstr_SetSigStrengthMeasured called with val = 1
00 007.131 ceplfresgate__vid_StopDemux
00 007.131 ceplfresgate__aud_StopDemux
00 007.146 ceplfresgate__pcr_StopDemux
01 007.148 Mohanan: ConvertToSTVideoType : 2
01 007.153 hsvdvbmpl : dmxmed_SetVideoPid pid 600 type 2
00 007.163 ceplfresgate__vid_StartDemux
01 007.172 Mohanan: ConvertToSTAudioType : 0x2000000
01 007.174 hsvdvbmpl : dmxmed_SetAudioPid pid 601 type 5
00 007.182 ceplfresgate__aud_StartDemux
01 007.185 hsvdvbmpl : dmxmed_SetPcrPid pid 600
00 007.191 ceplfresgate__pcr_StartDemux
00 007.191  usecase = 4
00 007.484 tmtv520avinst__vipN_OnVideoPresentChanged
00 007.486 direct ceplfresgate_vipN_OnVideoPresentChanged to 2
00 007.491  m_FieldFreq = 50tmtv520avinst__vipN_OnNumberOfVisibleLinesChanged
00 007.494 direct ceplfresgate_vipN_OnNumberOfVisibleLinesChanged
00 007.507 tmtv520avinst__vipN_OnImageFormatChanged
01 007.571 svspow_m.c:4589::First pgsel completed at 1792002449
00 007.575 cetvbend_mpowon: cetvdisplay_preheatN_OnEvent
00 007.577 cetvbend_mpowon: UpdateAmbientLight => cetvambi_ambl_SetState
01 007.587 <5>     7583 ZAP_END - UnBlank
01 007.589  svbas pgselN_OnProgramChangeCompleted
01 007.960 svspow_m.c:4753::Detected Mute = FALSE in vmtN
01 007.964 <5>     7959 ZAP_END - UnBlank
01 007.966 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 2048
01 007.968 RFS not found in environment
01 007.977 RFS not found in environment
01 007.979 FLASH system, mount request for partition 2 accepted
00 008.331 Timeout on mountcheck
01 008.692 svspow_m.c:4760::flashopN_OnPartitionMounted::partitionid:2
00 008.769 cetvbend_mpowon: cetvambi_ambilight_Disable
00 009.002 argv[0] is /philips/bin/networkhelper
00 009.002 udhcpc gave me deconfig
00 009.002 HandleUdhcpcNotif : msgq is 32769
01 009.155 svspow_m.c:4772::Sent flashopN_OnPartitionMounted::MOUNT_ON_EVENT
01 009.158 svspow_m.c:1872::gfx setpower ON
01 009.162 svspow_m.c:1875::gfx powntf for ON
01 009.164 cbmhgpow_mpow: SetPower to ON
01 009.166 cbmhgpow_mpow: OnPowerChanged
01 009.168 svspow_m.c:3428::cbmhg powntf received for ON
01 009.171 svspow_m.c:1913::cbmhg setpower On
01 009.267 svspow_m.c:1926::JUICE setpower On
01 009.279 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 16
01 009.282 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 256
-1 009.292 AppMan: Window added (0,0-852x480) [4] - 2!
01 009.298 Surface 0, PlaneId 2 in AttachSurface
00 009.989 argv[0] is /philips/bin/networkhelper
00 009.989 udhcpc gave me bound
00 009.989 udhcpc gave me bound
```

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Figure 5-20 Example UART log during SWUPG startup (Normal startup) part 3.

```
00 009.989 IP address is 192.168.1.22
00 009.989 subnet mask is 255.255.255.0
00 009.989 $router is 192.168.1.1
00 009.989 First Gateway is 192.168.1.1
00 009.989 $dns is 192.168.1.1
00 009.989 DNS1 is 192.168.1.1
00 009.989 Interface is eth0
00 009.989 HandleUdhcpcNotif : msgq is 32769
00 010.083 route: SIOC[ADD|DEL]RT: No such process
01 010.623 svspow_m.c:3497::juice powntf received for ON
01 010.626 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 512
01 010.641 svspow_m.c:1943::ceapps setpower On
-1 010.649 AppMan: Window config - unhiding window
-1 010.649 Relayout of window 4
-1 010.657 AppMan: Switch focus to 0x5132d600 [4]
00 010.702 (!!!) *** WARNING [color keying does not work on UPPER layer] *** [Philips/DirectFB/systems/cetvfb/primary.c:202 in get_color_minmax()]
01 010.868 svspow_m.c:3479::apps powntf received for ON
-1 010.881 AppMan: Window added (0,0-720x576) [5] - 0!
01 010.897 Surface 1, PlaneId 0 in AttachSurface
01 011.083 svspow_m.c:1803::Reached HandleTurnOn2Event with Event = 1024
01 011.086 svspow_m.c:693::Set Reached on state at 1792005965
01 011.088 svspow_m.c:755::Set has reached ON state
01 011.091 InitCehtvData done
01 011.312 ReadCehtvData ConfigVersion: [0.01] OK
01 011.312 ReadCehtvData ProductID: [Q591E] OK
01 011.312 ReadCehtvData OUI: [0000903E] OK
01 011.312 ReadCehtvData HardwareModel: [0203] OK
01 011.312 ReadCehtvData HardwareVersion: [0100] OK
01 011.312 ConvertAscii2Bin started
01 011.312 ConvertAscii2Bin done
01 011.312 ConvertAscii2Bin started
01 011.312 ConvertAscii2Bin done
01 011.312 ReadCehtvData PublicKey: OK
01 011.339 ReadCehtvData done, ConfigOK: TRUE
00 011.666 cetvbend_mpowon: iambl_SetState onoff = 1
00 011.668 cetvbend_mpowon: iambl_SetState onoff => cetvambi_ambl_SetState
00 011.672 cetvbend_mpowon: cetvambi_ambilight_Enable
-1 011.884 HK_PREPARE_PS_DONE received for cmd: 5, src: 1
-1 011.884 Remaining PowerChangeBitmap: 0
-1 011.884 starting : /philips/apps/spettApp
-1 011.884 starting : /philips/apps/media
01 011.905 svspow_m.c:2871::PREPARE_PS_DONE for cmd: 5
01 011.994 cbmhgpow_mpow: mRegisterAlarm - ClockSet
02 012.518 *-------------) FusionDale v0.1.1 (-------------*
02 012.518 (c) 2006-2007 directfb.org
02 012.518 ----------------------------------------------
02 012.524 Using errlib version 0.9
02 012.524 ***SPETT*** FusionDale Init done
02 012.524 ***SPETT*** Windows created
00 012.530 Errlib 0.9 registered from process 226
00 012.530 *** DirectFB Surface allocation FALLBACK! Acquiring id 7 with size 376320
-1 012.533 AppMan: Process added (226) [4]!
-1 012.533 AppMan: Window added (0,0-800x600) [6] - 0!
-1 012.533 Border window attached
-1 012.533 AppMan: Window added (100,100-672x280) [7] - 2!
-1 012.533 AppMan: Window config - unhiding window
-1 012.533 AppMan: Switch focus to 0x51334000 [7]
02 012.581 Event class: DFEC_WINDOW
01 012.791 NITParser: Else of sec_SctArrived
01 012.791 cbmhgoad_m: strapi notification on completed
01 012.852 cbmhgoad_m :TARGETNIT = 0, TARGETNID = 513, spid = -1
01 012.854 cbmhgoad:mBarkerOadPumpHandler : mPrefFreqDirFound = 0
01 012.857 cbmhgoad: noofrecords = 0
03 013.196 MediaApp: Initalized and running
03 013.312 (*) FusionDale/Config: Parsing config file '/etc/fusiondalerc'.
03 013.312 *-------------) FusionDale v0.1.1 (-------------*
03 013.312 (c) 2006-2007 directfb.org
03 013.312 ----------------------------------------------
03 013.312 (*) Fusion/SHM: NOT using MADV_REMOVE (2.6.18.0 < 2.6.19.2)! [0x020 61200]
03 013.312 (*) Direct/Thread: Running 'Fusion Dispatch' (MESSAGING, 244)...
03 013.334 Using errlib version 0.9
03 013.334 MediaApp: Call back Init from gplib
00 013.338 Errlib 0.9 registered from process 227
03 013.482 arunkp: mplfabsav2_m.c: 209: mplfabsav2__pow_Init:
-1 013.583 AppMan: Process added (227) [5]!
03 013.619 MediaApp: Gfx Init done
03 013.891 mediaApp: fusiondale Init, register called
03 013.891 mlock patch inited
-1 013.895 AppMan: Window added (100,100-480x300) [8] - 0!
-1 013.895 Border window attached
-1 013.895 AppMan: Switch focus to 0x51334e00 [8]
-1 013.895 AppMan: Window added (100,100-480x300) [9] - 1!
-1 013.895 Audio node attached
-1 013.907 AppMan: Switch focus to 0x51334e00 [8]
03 013.955 Network enabled and available - enabling allegro
03 013.958 allegroenb_Enable
02 014.072 ***SPETT*** All inits done
02 014.075 ***SPETT*** gpilib.startr.Init done
01 014.105 ReadCehtvData done, ConfigOK: TRUE
01 014.107 cbmhgoad_mswupdt: chil_test_oui_only OUI = 0xd060, ret = 0
01 014.375 CEAPPS : TARGETNIT = 0, TARGETNID = 8, spid = -1
03 014.555 The address is: 192.168.1.22
03 014.559 arunkp: mplfabsav2_m.c: 219: mplfabsav2__pow_TurnOn:
-1 014.957 AppMan: Window added (0,0-852x480) [10] - 2!
00 015.002 *** DirectFB Surface allocation FALLBACK! Acquiring id 0 with size 410880
03 015.005 Surface 0, PlaneId 2 in AttachSurface
00 015.027 (!!!) *** WARNING [color keying does not work on UPPER layer] *** [Philips/DirectFB/systems/cetvfb/primary.c:202 in get_color_minmax()]
03 015.224 Infrastructure Resource Gained by mediaApp
03 015.226 (resourcechanged && !(ResourceOwned & FULL_STATE) : Setting mappstate_mediaIdle
-1 015.276 AppMan: Window config - unhiding window
00 015.671 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
```

I_17662_004d.eps
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Figure 5-21 Example UART log during SWUPG startup (Normal startup) part 4.

```
03 015.788 Census Found device uuid: c7a4be7e-547d-11dc-8034-cc1538aeec30
03 015.792      DeviceType: schemas-upnp-org:device:MediaServer:1
-1 016.098 AppMan: Window config - unhiding window
-1 016.098 Relayout of window 5
00 017.948 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 018.154 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 018.727 ***GVC: T2 - ceisusb_m.c (951): "usbdevspN_OnDeviceError( DeviceUnknownAttachedError, -1 )" notification given
00 024.079 --- pass 0 ---
00 024.082 freeMem    :    26620
00 024.084 pgmajfault :        0
00 024.086 sectorsread:    11440
01 035.636 Merging eit data
01 035.650 Merging eit data
01 035.656 1419 records after eliminating duplicates
01 035.663 1419 records after eliminating duplicates
```

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Figure 5-22 Example UART log during SWUPG startup (Normal startup) part 5.

- The “Application selection startup” part in the logs shows which application is being started up: backup SWUPG, normal SWUPG, TV application, …
- In the TV application (Normal startup) case, there is no print on the UART which shows the software has started up completely. When startup issues arise, the best way to tackle them is by comparing the bad UART print with a correct print of the same release.

Upgrade of a TV set.

Following cannot be seen during industrial mode!

- When the Industrial Mode is enabled with command 203, no prints can be seen anymore on the UART. This is to not interfere with the P2P protocol.
- When in normal mode, the UART will show what the actions are during the upgrade.
- At certain periods in time during programming, the total size currently flashed (Totalsize flashed) and the size which should be finally flashed (TotalProgramSize) will be printed.

```
13:51:07     Tv520_Eu_0.61_prod     <---          Upgrade now
13:51:11
13:51:11
13:51:11  Software is equal or older,
13:51:11       - press OK to stop
13:51:11       - press down + OK to continue
13:51:11
13:51:12 L: 13%
13:51:15 L: 94%
13:51:16 V: 1%
13:51:29 V: 98%
13:51:30 P: 0%
13:51:31 P: 0%
13:51:31  /data/rupg/* is being scanned for size
13:51:31  current flashsize: 7949008:
13:51:31  current flashsize: 8006889:
13:51:31  current flashsize: 8016293:
13:51:31  /data/rw/* is being scanned for size
13:51:31  current flashsize: 8016309:
13:51:31  /squash/* is being scanned for size
13:51:31  current flashsize: 15196597:
13:51:31  /bffs2/* is being scanned for size
13:51:31  current flashsize: 15208584:
13:51:31  current flashsize: 15208658:
13:51:31  current flashsize: 19590958:
13:51:31  current flashsize: 21687842:
13:51:31  current flashsize: 22703738:
13:51:31  current flashsize: 24080366:
13:51:31 m_JffsMounted = 3
13:51:31 Sync called
13:51:31 Sync DONE
13:51:31 CheckUnMount:  /mnt/jffs0
13:51:31 /mnt/jffs0 is mounted
13:51:31 Unmount /mnt/jffs0
13:51:31 /mnt/jffs0 is not mounted
13:51:31 umounting /mnt/jffs0 ok
13:51:31 umounting partition 4 from jffs2 file system passed
13:51:31
13:51:31 Sync called
13:51:31 Sync DONE
13:51:31 CheckUnMount:  /mnt/jffs1
13:51:31 /mnt/jffs1 is mounted
13:51:31 Unmount /mnt/jffs1
13:51:31 /mnt/jffs1 is not mounted
13:51:31 umounting /mnt/jffs1 ok
13:51:31 umounting partition 5 from jffs2 file system passed
13:51:31 FORMAT 2
13:51:31  Totalsize flashed: 0, TotalProgramSize: 24080366
13:51:31 m_JffsMounted = 0
13:51:31 P: 0%
13:51:32 P: 0%
13:51:32 P: 0%
13:51:33 P: 0%
13:51:33  Format succesfull                    _____________>  Format 2 (bffs2 partition) succesfull
13:51:33  Totalsize flashed: 0, TotalProgramSize: 24080366
13:51:33 m_JffsMounted = 0
13:51:33 P: 0%
13:51:33 FORMAT 3                             _____________>  Format 3 (Squash partition) succesfull
13:51:33  Totalsize flashed: 0, TotalProgramSize: 24080366
13:51:33 m_JffsMounted = 0
13:51:33 spawning flash_eraseall
13:51:33   param: flash_eraseall
13:51:33   param: -q
13:51:33   param: /dev/mtd5
13:51:33 P: 0%
13:51:34 P: 0%
13:51:34 P: 0%
13:51:34 status: 1 ,erasing partimage partition succesfull
13:51:34   Totalsize flashed: 0, TotalProgramSize: 24080366
13:51:34 m_JffsMounted = 0
13:51:34 P: 0%
13:51:34 /data/rupg/
13:51:34  Totalsize flashed: 0, TotalProgramSize: 24080366
13:51:34 m_JffsMounted = 0
13:51:34 JFFS found to write /data/rupg/ceapps  ________> Writing to JFFS
13:51:35 mounting partition 4 to jffs2 file system passed
13:51:35
13:51:35  Totalsize flashed: 0, TotalProgramSize: 24080366
13:51:58 m_JffsMounted = 1
13:51:58 Sync called
13:51:58 Sync DONE
13:51:58 CheckUnMount:  /mnt/jffs0
13:51:58 /mnt/jffs0 is mounted
13:51:58 Unmount /mnt/jffs0
13:51:58 /mnt/jffs0 is not mounted
13:51:58 umounting /mnt/jffs0 ok
13:51:58 umounting partition 4 from jffs2 file system passed
13:51:58
13:51:58 P: 31%
13:51:58 /data/rw/
13:51:58  Totalsize flashed: 8016293, TotalProgramSize: 24080366
13:51:58 m_JffsMounted = 0
13:51:58 JFFS found to write /data/rw/cehtv     ________> Writing to JFFS
```

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Figure 5-23 Example UART log during normal user upgrade part 1.

```
13:51:58 P: 31%
13:51:59 P: 31%
13:51:59 mounting partition 5 to jffs2 file system passed
13:51:59
13:51:59  Totalsize flashed: 8016293, TotalProgramSize: 24080366
13:51:59 m_JffsMounted = 2
13:51:59 Sync called
13:51:59 Sync DONE
13:51:59 CheckUnMount:  /mnt/jffs1
13:51:59 /mnt/jffs1 is mounted
13:51:59 Unmount /mnt/jffs1
13:51:59 /mnt/jffs1 is not mounted
13:51:59 umounting /mnt/jffs1 ok
13:51:59 umounting partition 5 from jffs2 file system passed
13:51:59
13:51:59 P: 31%
13:51:59 WRITE /squashFS/                                  _______> Writing to Squash
13:51:59  Totalsize flashed: 8016309, TotalProgramSize: 24080366
13:51:59 m_JffsMounted = 0
13:51:59 v1 squash
13:51:59
13:51:59  Totalsize flashed: 8016309, TotalProgramSize: 24080366
13:51:59 spawning nandwrite
13:51:59   param: nandwrite
13:51:59   param: -z
13:51:59   param: 7180288
13:51:59   param: /dev/mtd5
13:51:59   param: /philips/pipe
13:51:59  execute nandwrite OK
13:51:59 Writing data to block 0
13:51:59 P: 31%
13:51:59 Writing data to block 4000
13:52:09 /philips/pipe could is closed                     _______> Finished writing to Squash
13:52:09 m_JffsMounted = 0
13:52:10 P: 63%
13:52:10 WRITE /bffs2/                                     _______> Writing to bffs2
13:52:10  Totalsize flashed: 15196597, TotalProgramSize: 24080366
13:52:10 m_JffsMounted = 0
13:52:10  Totalsize flashed: 15196597, TotalProgramSize: 24080366
13:52:32 Totalsize flashed: 24080366, TotalProgramSize: 24080366
13:52:32 Completed !!                                                  _______> Programming succesfull
13:52:32 Operation Successful! Remove all inserted media and restart the TV set.
```

I_17662_005b.eps
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Figure 5-24 Example UART log during normal user upgrade part 2.

Problem analysisof a TV set.

During programming:

- The amount of Bad Blocks is bigger then promised by the flash manufacture. This is checked on virgin boards.
- Bad blocks have been created during programming and there is not enough good block anymore in the partition to write data into. This can happen on boards which are being reprogrammed.
- Mounting of the JFFS partitions take to long.
- When the flashutil UPG is being programmed on a boards which already contains a different Partition Table, the writing of the bootblock (µBTM and partitionTable) will fail. This can only happen on non virgin boards.
- When the power drops the programming will be stop. Depending on when the power drop is the result will be different.
  1. FUS UPG. The SWUPG will try to reprogram the UPG once the power is back.
  2. Flashutil UPG. Cannot recover anymore, because nothing is in flash anymore. Has to be reprogrammed on the line again.
  3. Upgrade All. Depending when the power drop happens. When it happens in the beginning, the board will only be reprogrammable on the line.
- If a development UPG is used on a production SWUPG or visa versa. Validation will fail.
- If loading fails (cannot read file error), it is mostly due to a long USB cable or a bad USB stick.
- If the UPG size is bigger then the memory allocated by the software upgrade application, then the UPG will not be programmed. See the prints fo the SWUPG at startup.

During startup:

- Compare the UART logging on the problem board/set with a normal startup behaviour. Identify till which point the logging reaches.
- If a crash happens, it will be outputted on the UART. In the background the information of the dump will be written into JFFS0. The UPG to copy the dump content out of flash should be available for everybody.

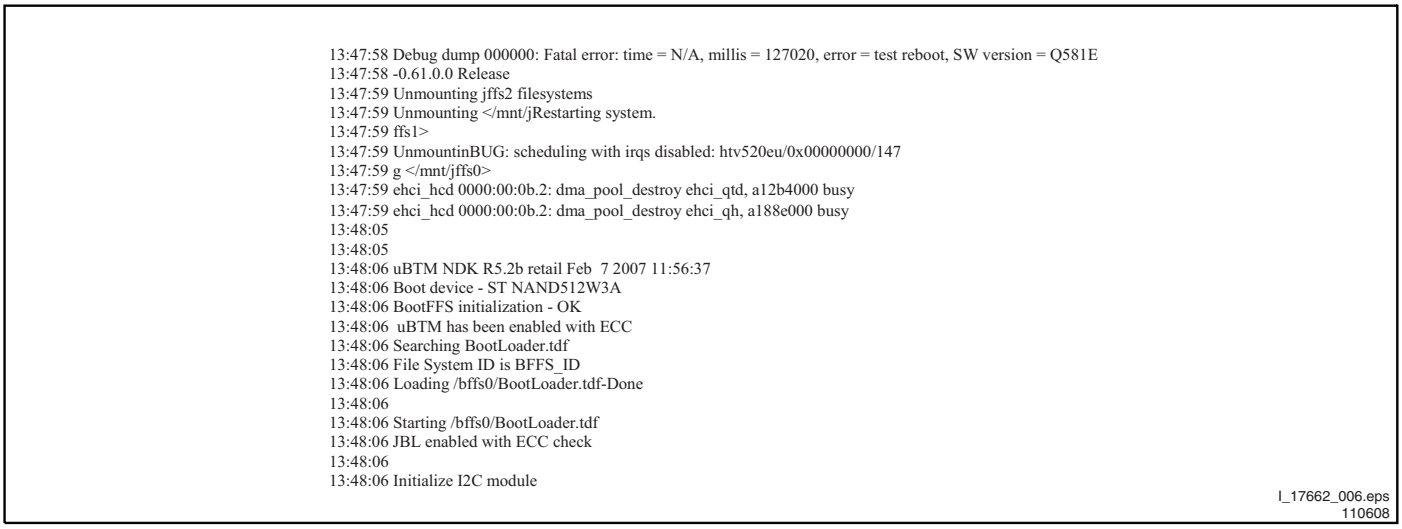


Figure 5-25 Example UART log during problem.

Problem solution.

When programming fails

- Check in the NVM at address 0x1D02 (BadBlocksAmount). This items is 2 bytes.
  1. If, after programming the flashutil UPG, this value is still the same as the one of the process NVM, then the amount of bad blocks was bigger then described by the flash manufacturer.
  2. If the value is filled in, it has to be checked if it's not to close the maximum amount possible.
  3. If the value is low, no problem.
- If mounting fails, it will be shown on the UART. This can only be seen when industrial mode is disabled.
- As the UART logs are disabled when in industrial mode, it is always good to have a set (or minimal setup) where the problem board can be tested in. In this way the problem can be reproduced in the normal mode of the SWUPG and the prints will be visible! **The Industrial Mode cannot be disabled when programming to see the output. This will cancel the ongoing programming!**

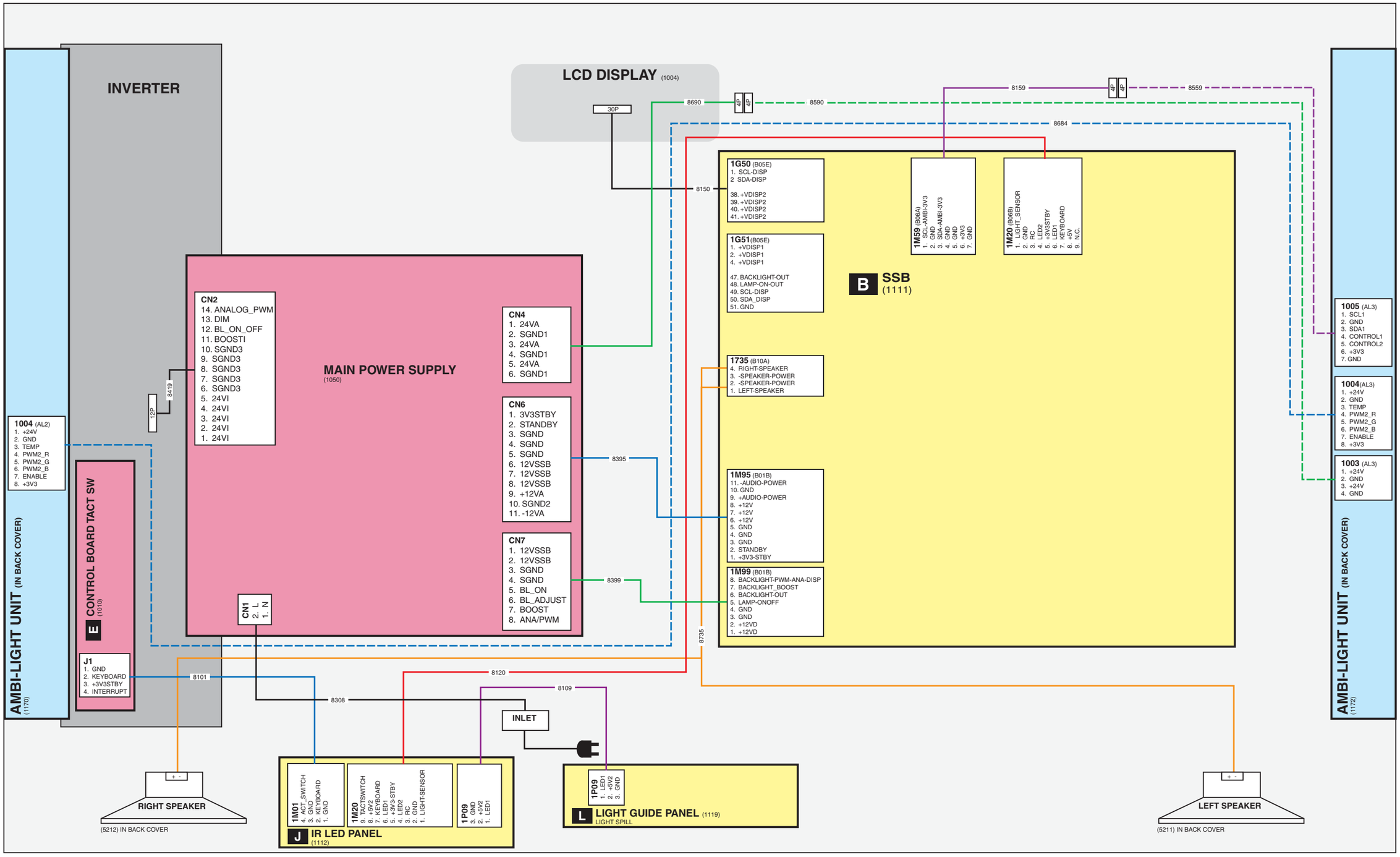
When startup fails:

- When a crash happens (only in the TV application!) and is followed by debug dump UART output, then a copy of the dump can put on a USB stick
  1. This can only be done in the TV application, so if the TV application keeps on crashing there is no way to copy the dump of the flash to a USB stick.
  2. When the TV application has started up completely, CSM can be entered by pressing 1, 2, 3, 6, 5, 4.
  3. Then put the remote in DVD mode and press 2, 6, 7, 9.
  4. The file Dump_seetypeplate_seetypeplate.bin can be found now on the USB storage device. The seetypeplate_seetypeplate will be filled in depending on the type of set.
  5. This .bin file can only be interpreted in a Philips development centre. Please give this input to your Philips Service contact person.
- Compare the UART logging on the problem board/set with a normal startup behaviour. Identify till which point the logging reaches.

6. Block Diagrams, Test Point Overview, and Waveforms

Wiring Diagram 32” (ME8)

WIRING DIAGRAM 32” (STYLING ME8)



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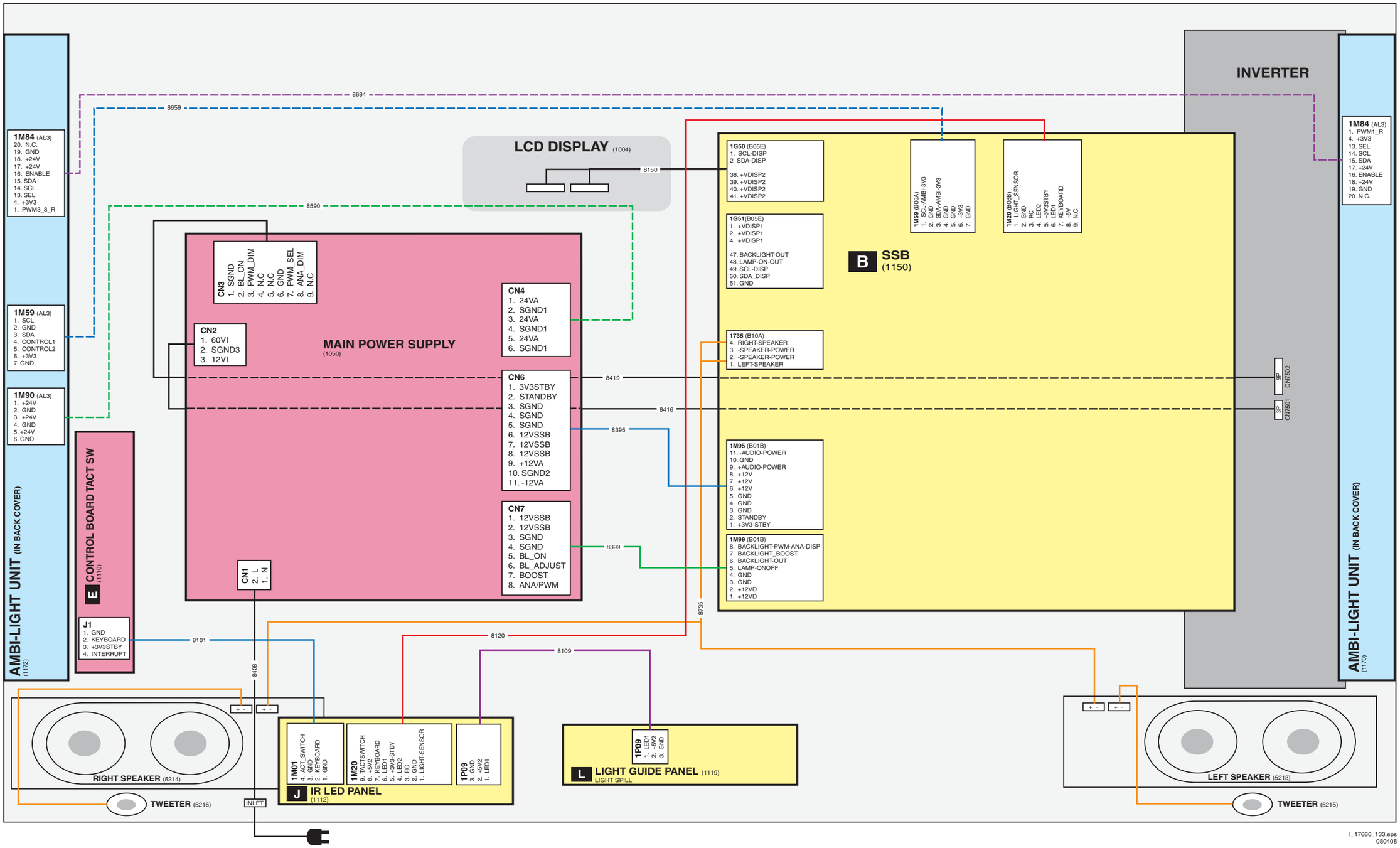
170408

Wiring Diagram 32” (VE8)

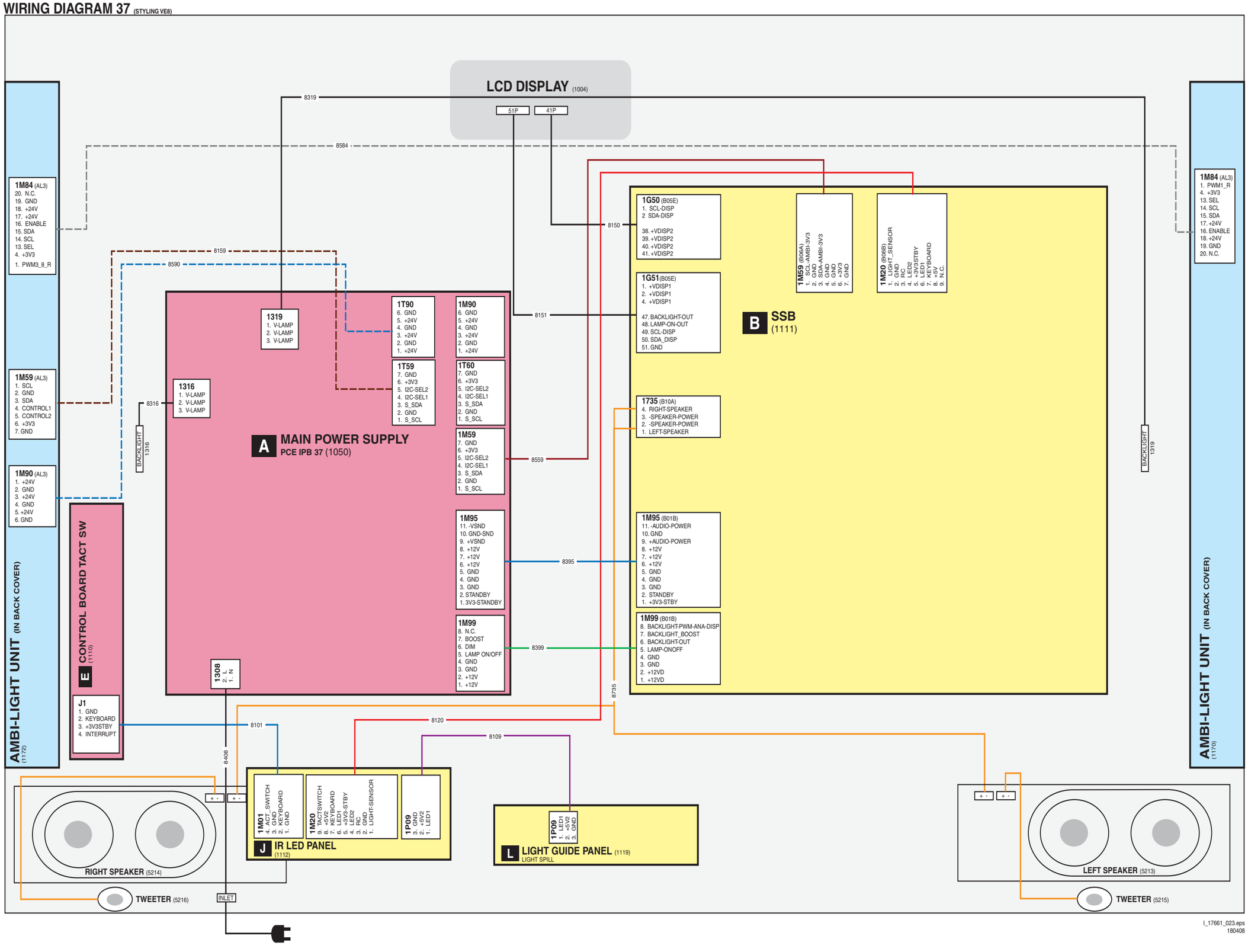
WIRING DIAGRAM 32” (STYLING VE8)



I_17660_133.eps
080408

Wiring Diagram 37” (ME8)

WIRING DIAGRAM 37 (STYLING VE8)



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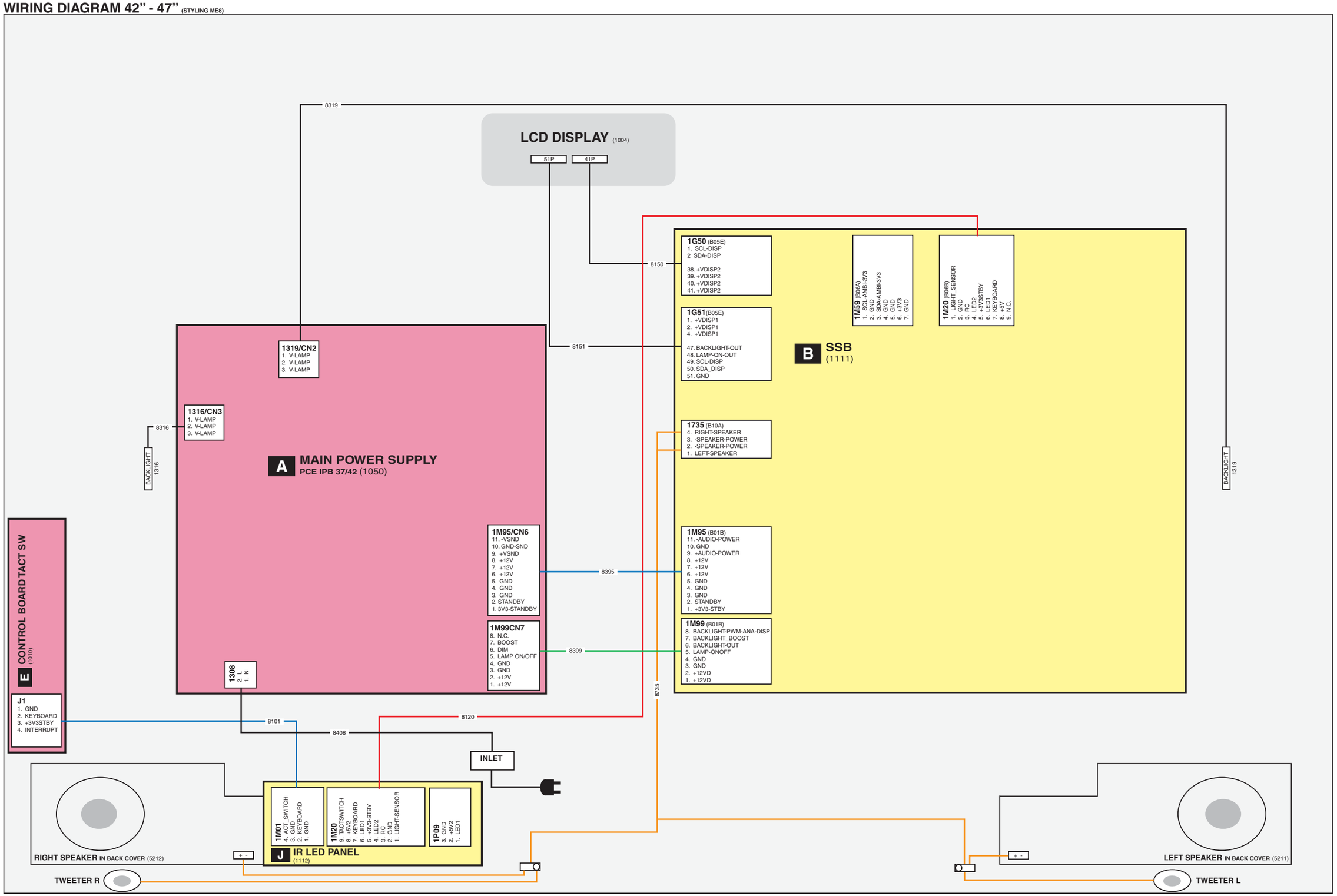
180408

Wiring Diagram 42” + 47” (ME8)

WIRING DIAGRAM 42” - 47” (STYLING ME8)



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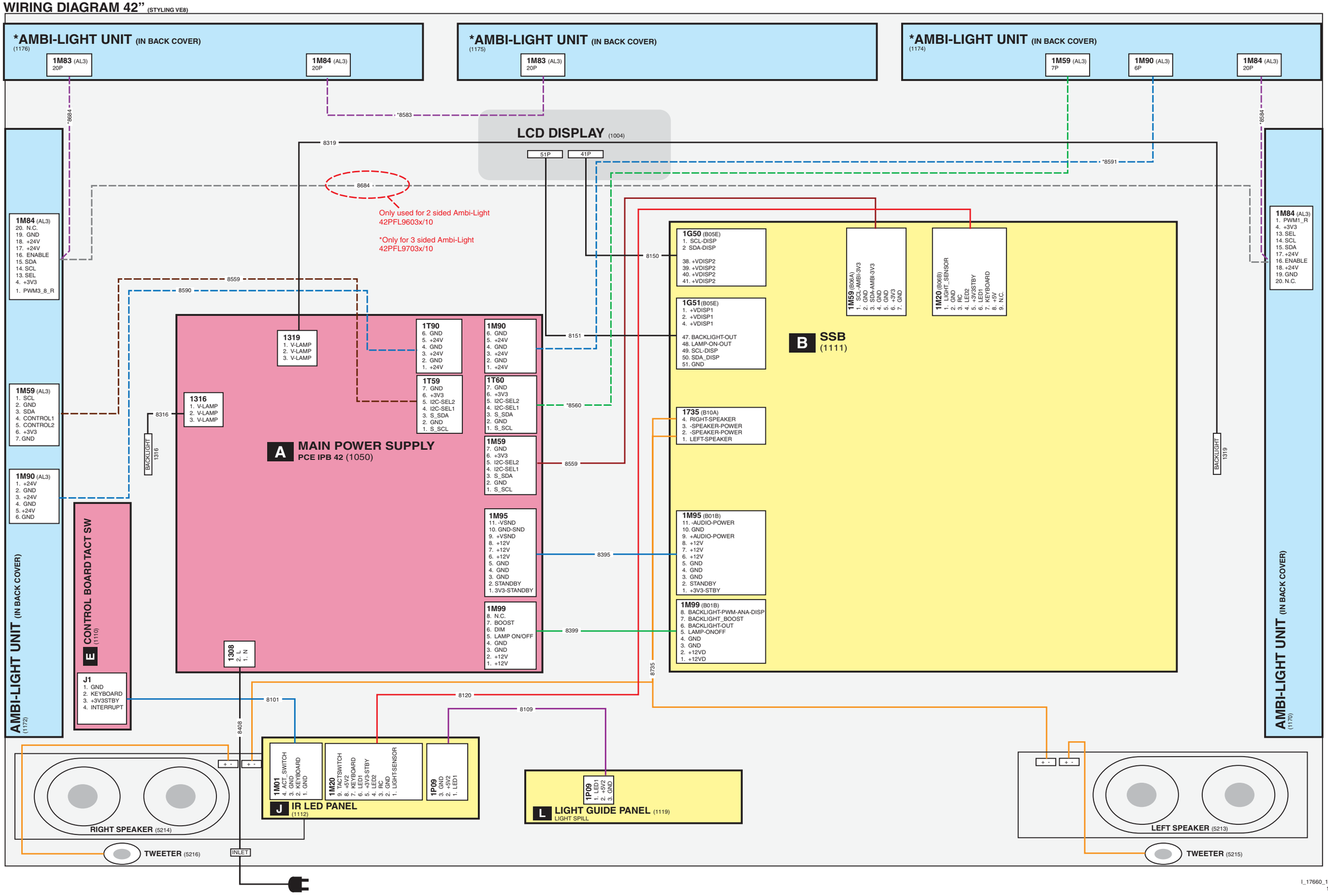
Wiring Diagram 42” (VE8)

WIRING DIAGRAM 42” (STYLING VE8)



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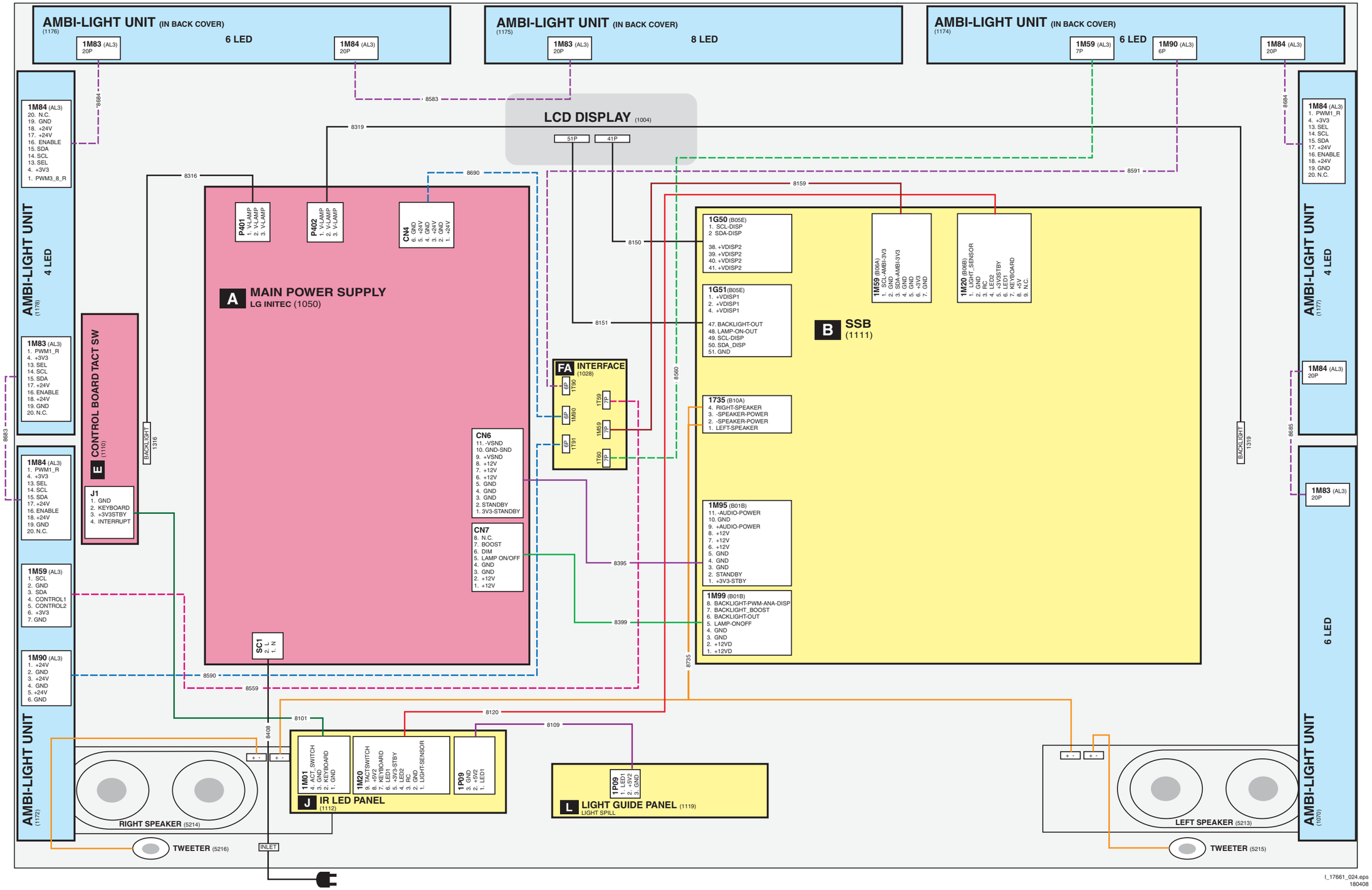
Wiring Diagram 47” (VE8)

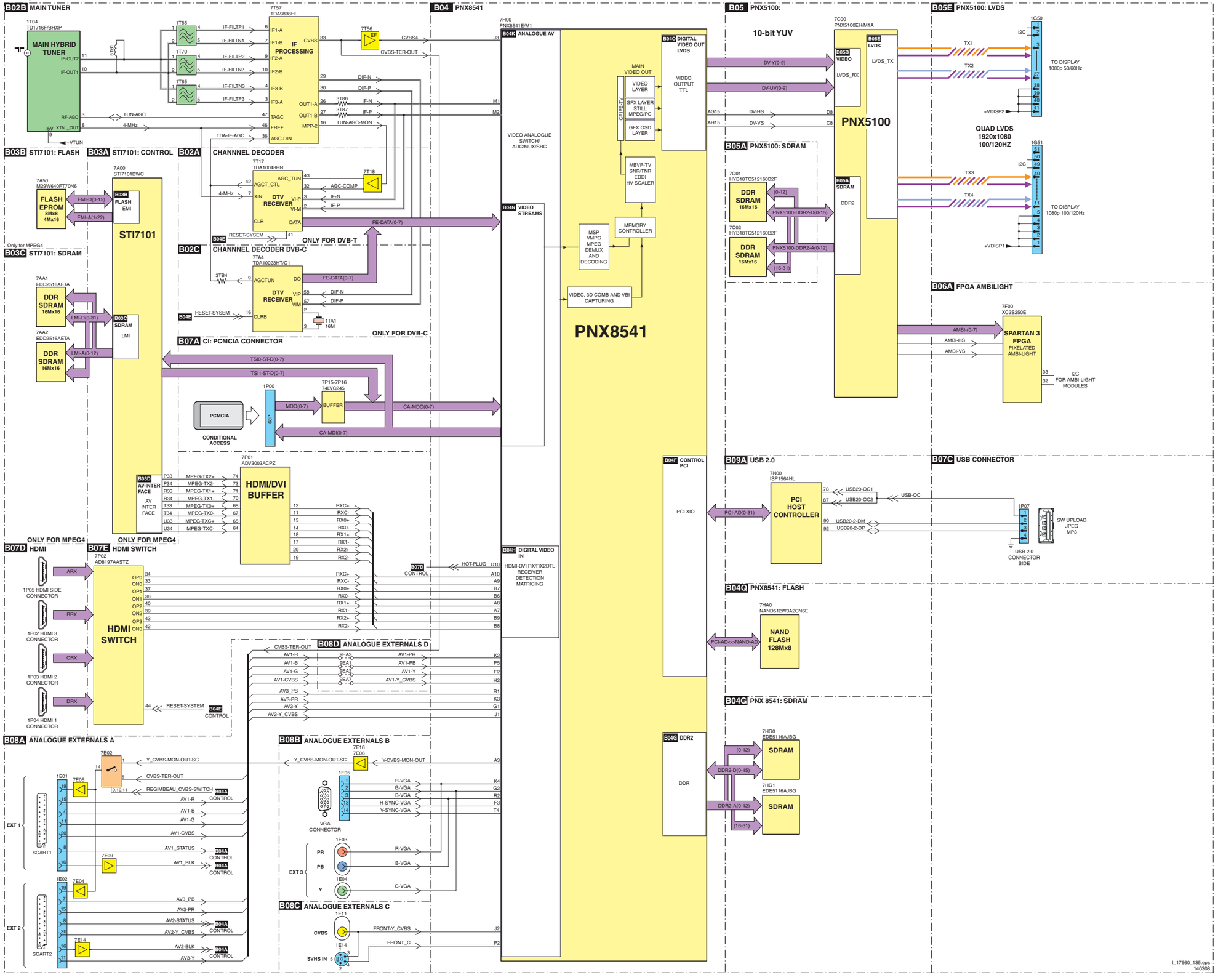
WIRING DIAGRAM 47” (STYLING VE8)



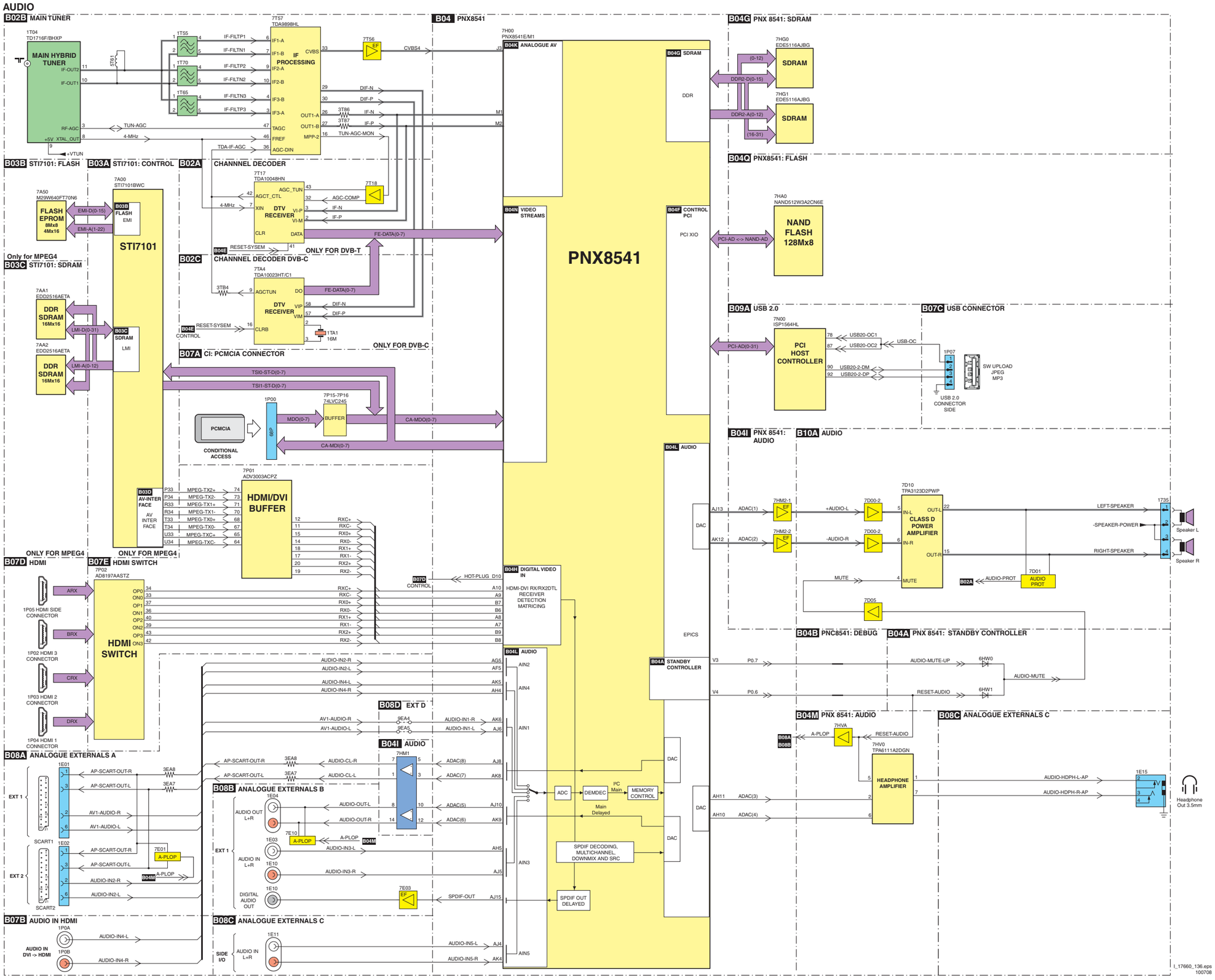
I_17661_024.eps
180408

Block Diagram Video

VIDEO

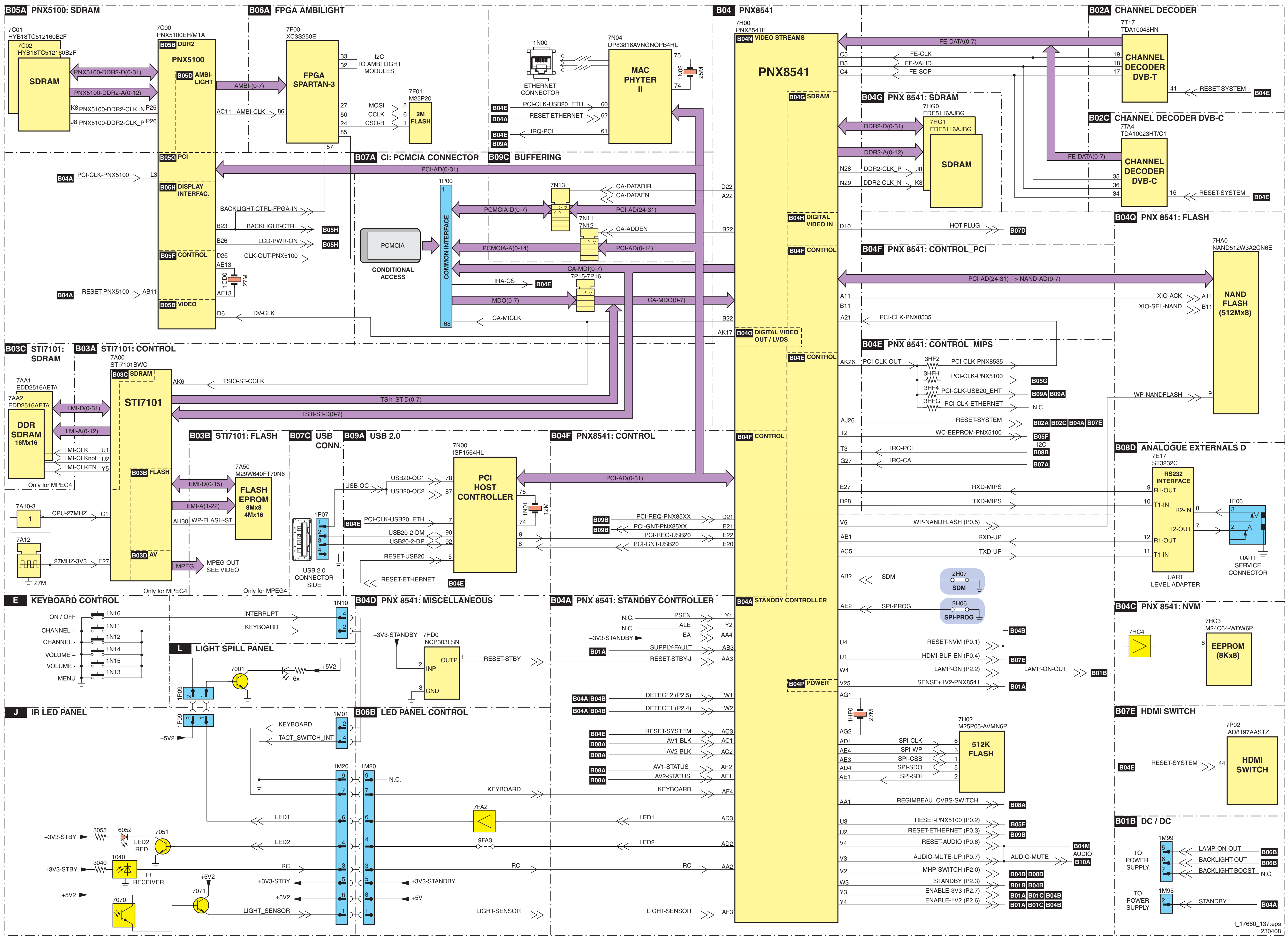


Block Diagram Audio



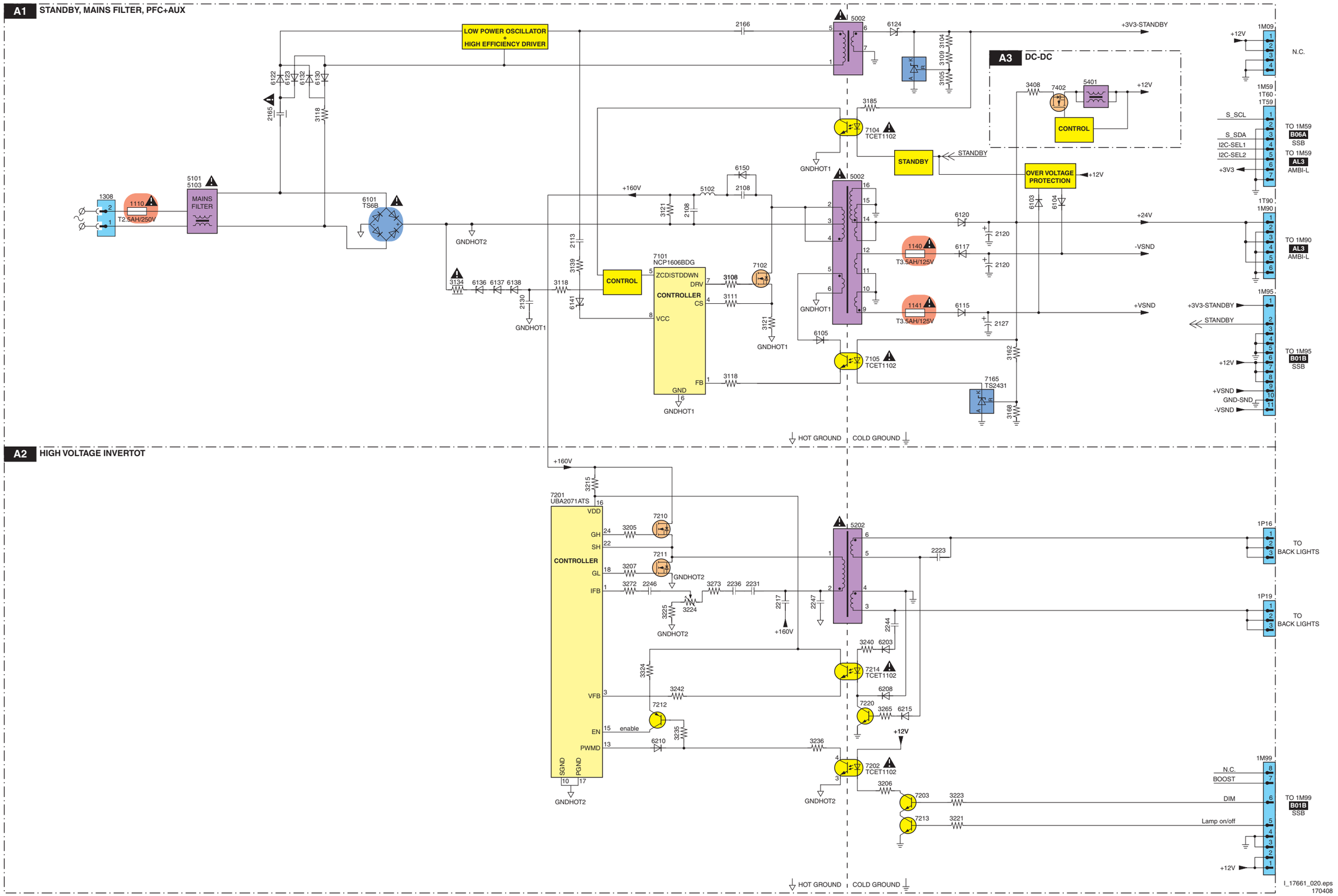
Block Diagram Control & Clock Signals

CONTROL + CLOCK SIGNALS

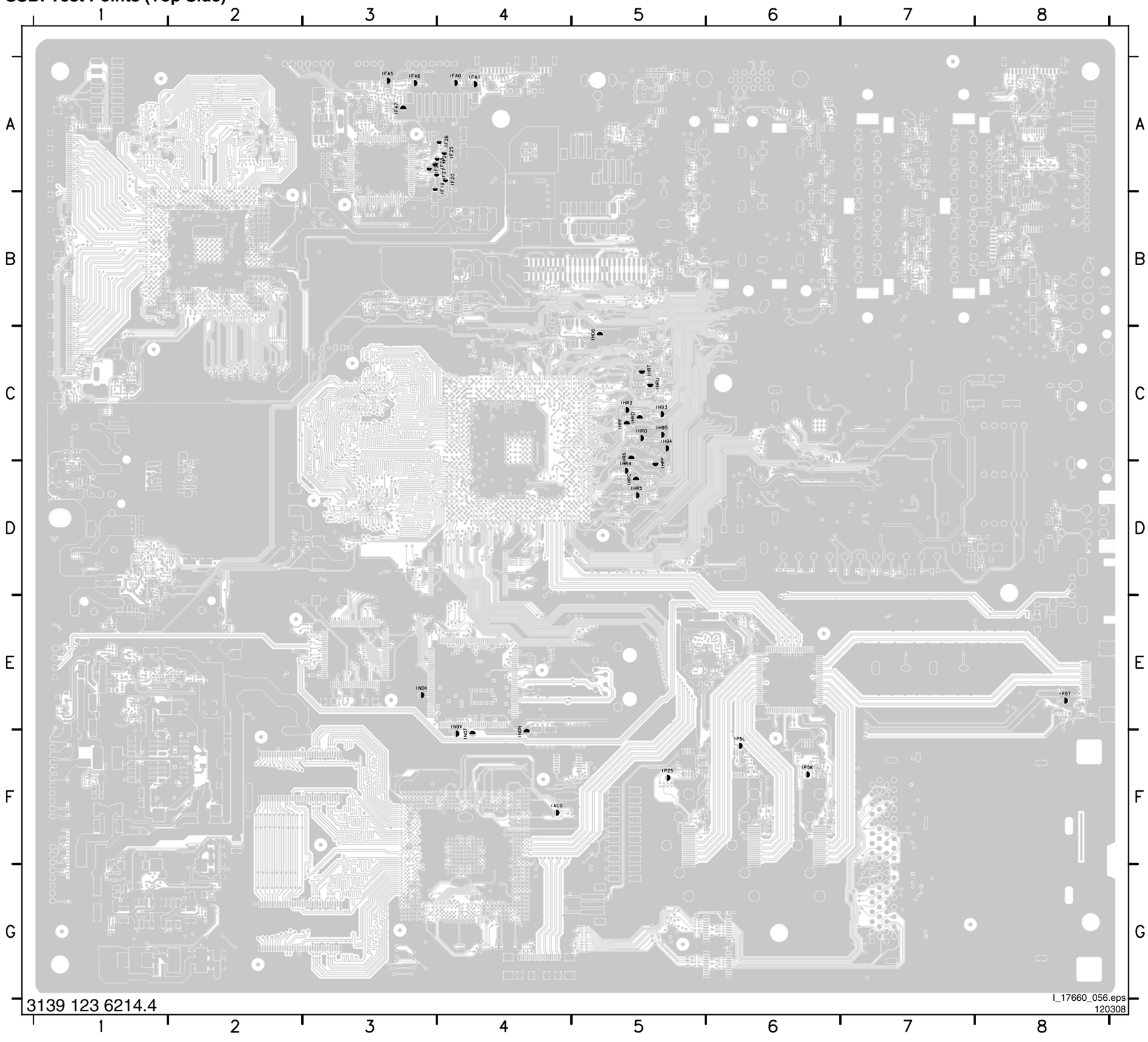


Block Diagram Main Display Supply (42”)

MAIN DISPLAY SUPPLY



SSB: Test Points (Top Side)



I436 A4
I641 A4
I642 A4
I643 A3
I644 A3
I645 A3
I646 A3
I647 F4
I648 C5
I649 C5
I651 A3
I659 C5
I660 C5
I661 C5
I662 C5
I663 C5
I664 D5
I665 A4
IAC0 F4
IAC0 F4
IF19 A4
IF20 A4
IF20 A4
IF21 A4
IF22 A3
IF23 A4
IF24 A4
IF25 A4
IF26 A4
IFA0 A4
IFA0 A4
IFA1 A4
IFA5 A3
IFA5 A3
IFA6 A3
IFA7 A3
IFA7 A3
IH06 C5
IH06 C5
IH93 C5
IH94 C5
IH95 C5
IH95 C5
IHPF D5
IHPF D5
IHR0 C5
IHR3 C5
IHR3 C5
IHR4 D5
IHR4 D5
IHR5 D5
IHR5 D5
IHR6 C5
IHR6 C5
IHRC D5
IHRD C5
IHRF C5
IHRT C5
IHRU C5
INOK E3
INOK E3
INON F4
INON F4
INOT F4
INOV E4
INOV F4
IP25 F5
IP25 F5
IP5K F6
IP5K F6
IP5L F6
IP5L F6
IP5T E8
IP5T E8

3139 123 6214.4

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120308

SSB: Test Points (Bottom Side)

Test point	Grid
A1	D2
A2	D2
A3	D2
A4	D2
A5	C4
F1	E8
F2	D8
F3	D8
F4	D8
F5	D8
F6	D8
F7	A5
F8	D8
F9	A5
I1	E8
I2	E8
I3	D8
I4	D8
I5	D8
I6	D8
I7	D8
I8	E8
I9	D7
F10	A5
F11	B6
F12	B6
F13	A6
F14	B5
F15	A6
F16	B6
F17	B6
F18	B6
F19	A6
F20	A6
F21	A6
F22	A6
F23	A6
F24	G3
F25	B5
F26	A5
F27	A6
F28	A5
F29	A5
F30	A5
F31	A6
F32	F3
F33	F3
F34	F3
F35	F3
F36	F3
F37	F3
F38	G2
F39	F2
F40	E2
F41	E2
F42	F8
F43	E8
F44	F7
F45	F8
F46	G7
F47	F7
F48	F8
F49	G8
F50	E8
F51	E8
F52	E8
F53	E8
F54	F7
F55	F8
F56	G7
F57	B4
F58	B4
F59	B4
F60	B4
F61	B4
F62	B4
F63	B5
F64	A1
F65	A1
F66	A1
F67	B1
F68	A1
F69	A1
F70	B1
F71	B1
F72	A1
F73	A1
F74	B4
F75	D1
F76	B1
F77	B1
F78	C1
F79	B1
F80	D1
F81	D1
F82	B1
F83	C1
F84	B1
F85	B1
F86	B1
F87	B1
F88	B1
F89	A1
F90	A1
F91	A1
F92	A1
F93	A1
F94	A2
F95	A3
F96	A3
F97	A3
F98	A4
F99	A4
I10	E8
I11	D8
I12	D8
I13	D8
I14	D7
I15	D8
I16	D8
I17	C8
I18	D8
I19	C8
I20	D8
I21	C8
I22	E8
I23	D7
I24	D8
I25	E7
I26	E7
I27	D8
I28	D8
I29	D8
I30	D8
I31	D7
I32	D7
I33	D8
I34	D8
I35	F4
I36	E3
I37	E1
I38	E1
I39	E1
I40	G4
I41	F2
I42	B6
I43	B5
I44	G2
I45	F2
I46	F2
I47	F2
I48	F2
I49	D3
I50	D3
I51	D3
I52	C3
I53	D3
I54	D2
I55	D3
I56	D2
I57	C2
I58	C2
I59	C4
I60	C4
I61	D4
I62	C4
I63	D4
I64	D4
I65	D4
I66	C5
I67	C5
I68	E8
I69	E7
I70	F7
I71	F7
I72	F8
I73	E7
I74	F8
I75	B6
I76	F8
I77	F8
I78	F7
I79	E8
I80	B5
I81	B5
I82	C5
I83	C5
I84	F8
I85	C4
I86	F8
I87	C5
I88	F7
I89	C5
I90	C4
I91	B4
I92	B4
I93	C6
I94	C7
I95	C7
I96	C6
I97	D5
I98	D5
I99	D5
AHF0	C4
AT50	D2
AT51	C2
AT62	D2
AT63	D2
F100	A3
F101	A3
F102	A1
F103	A1
F104	A1
F105	A1
F106	A2
F107	G7
F108	G8
F109	G8
F110	G8
F111	G7
F112	G7
F113	G7
F114	G7
F115	G8
F116	G8
F117	G7
F118	G7
F119	E7
F120	F8
F121	F8
F122	F8
F123	F8
F124	F7
F125	E8
F126	F8
F127	F8
F128	F8
F129	F8
F130	G8
F131	F8
F132	F8
F133	G8
F134	F8
F135	G8
F136	G8
F137	F8
F138	F8
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I549	C8
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I563	A8
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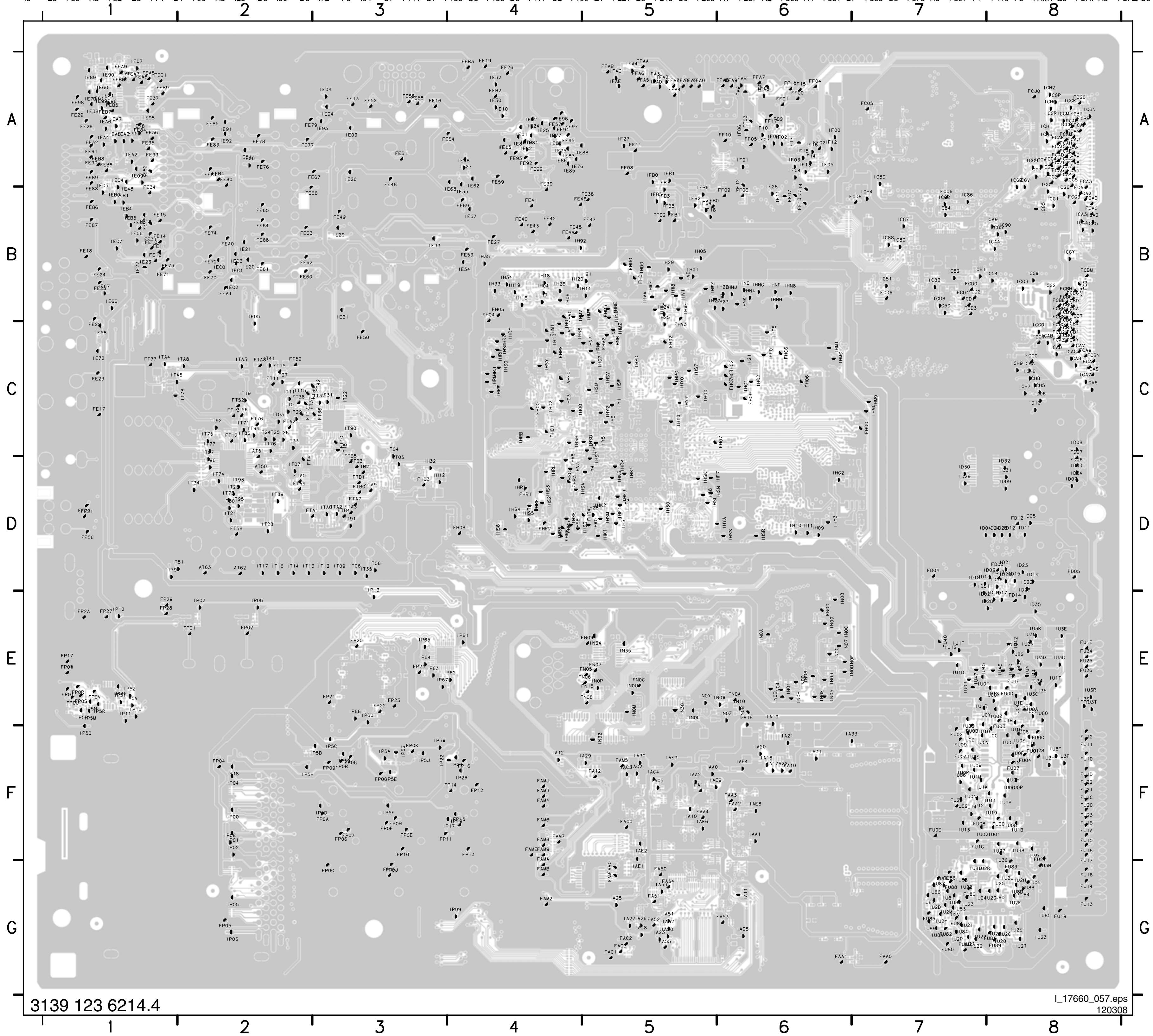
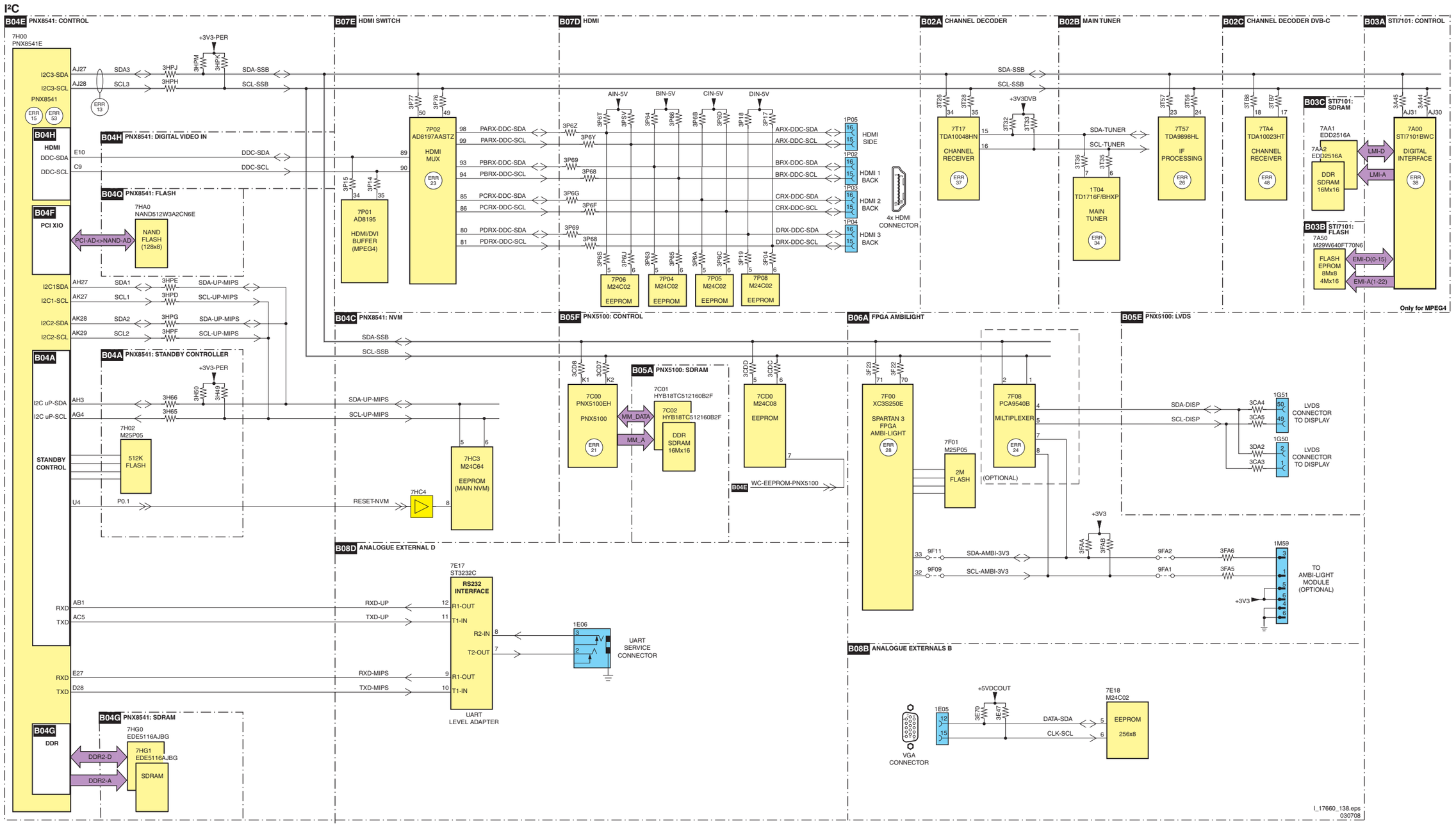
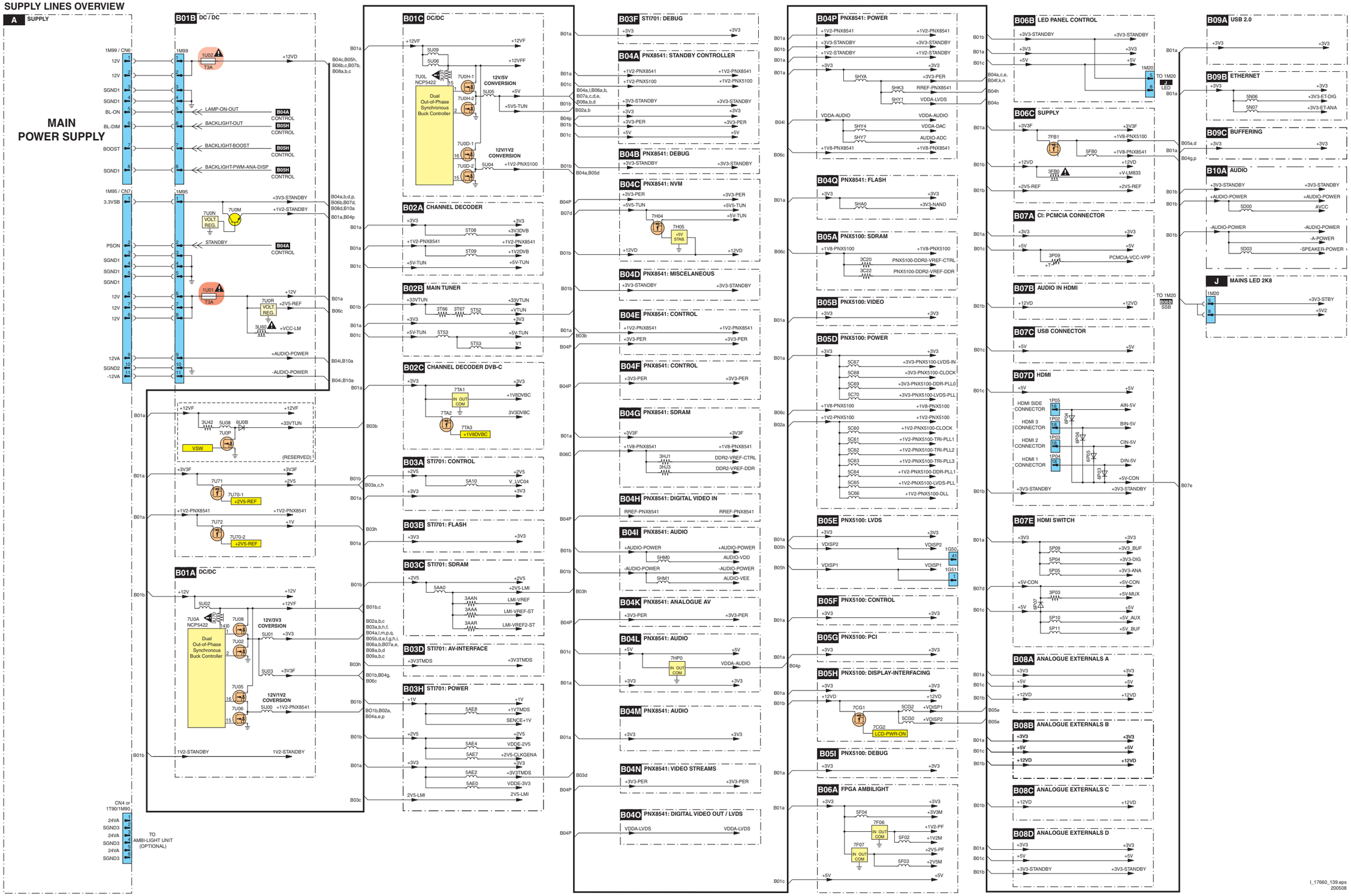


I2C IC Overview



Supply Lines Overview

SUPPLY LINES OVERVIEW



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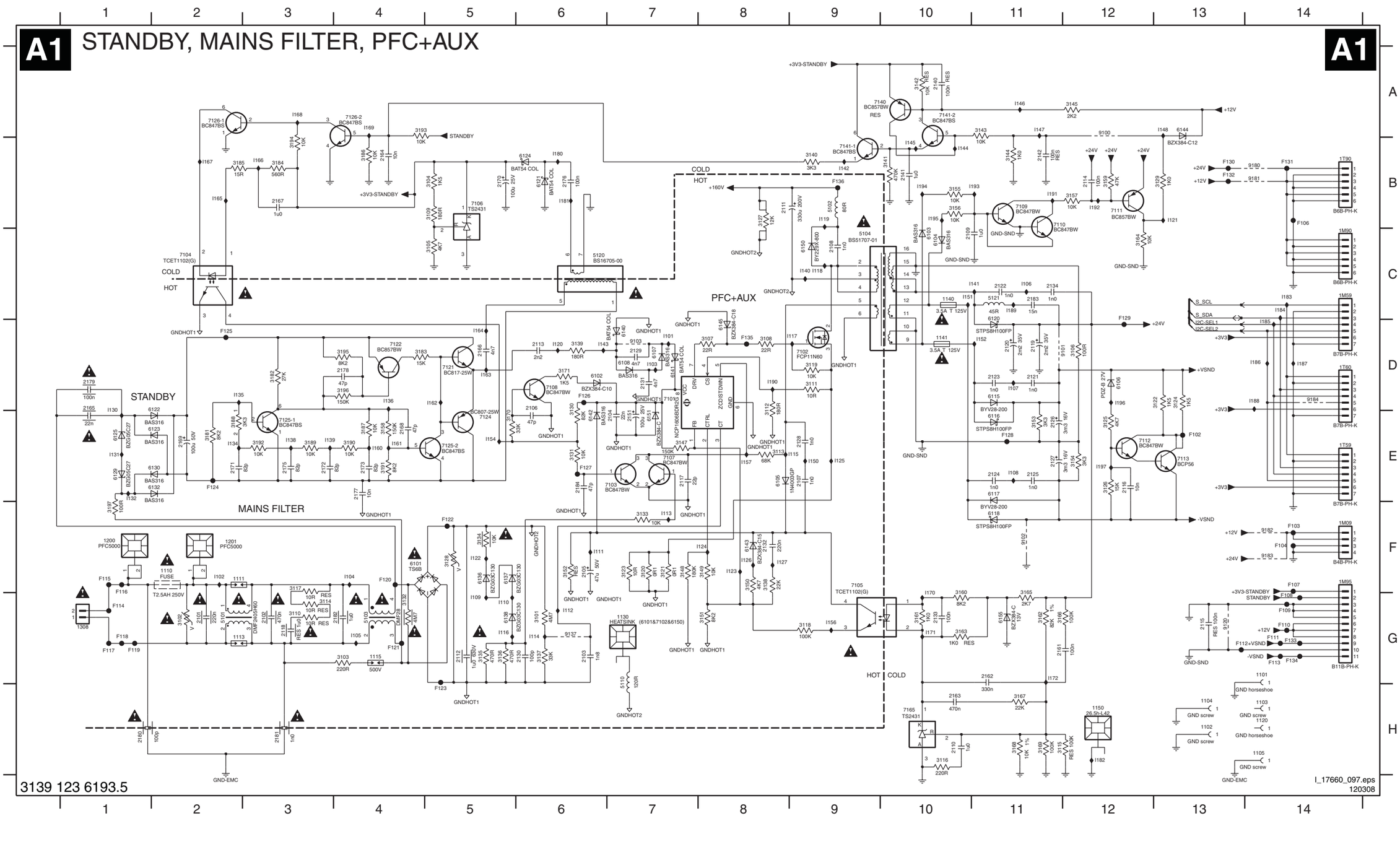
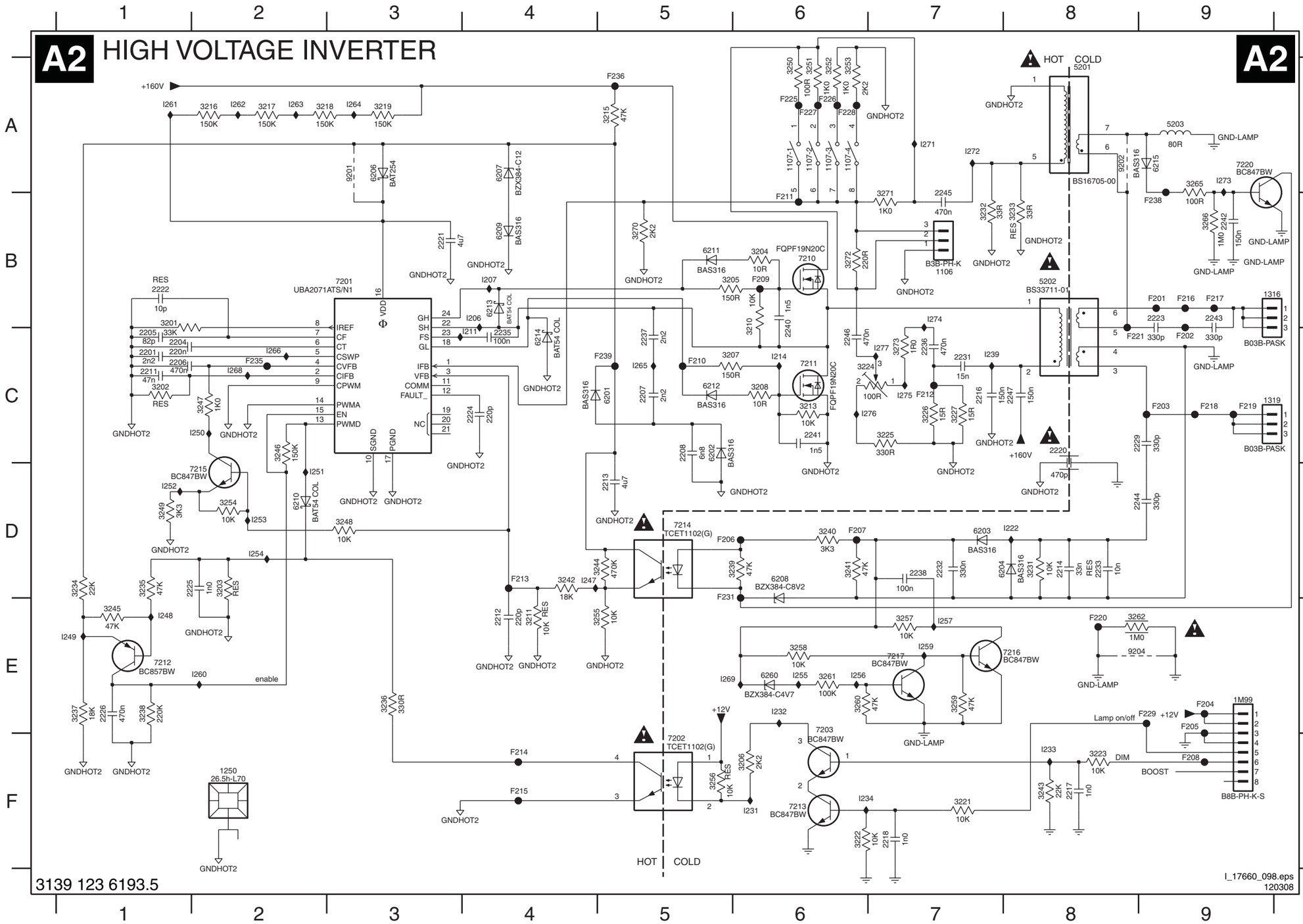
7. Circuit Diagrams and PWB Layouts

Main Power Supply IPB 42: Stby, MF

1101 G14	1200 F1	2104 E7	2117 E7	2130 G6	2165 D1	2179 D1	3108 D8	3121 F7	3134 F5	3148 F7	3161 G10	3183 D4	3196 D4	6105 E8	6125 E1	6150 C9	7111 B12	7165 H10	F103 F14	F117 G1	F130 B13	I107 D11	I120 D6	I136 D4	I151 C10	I168 A3	I188 D14
1102 H13	1201 F2	2105 F6	2118 G3	2131 D7	2166 D5	2180 H1	3109 B5	3122 D13	3135 G5	3149 F8	3162 G11	3184 B3	3197 F1	6106 D12	6129 E1	6151 E7	7112 E12	9100 A12	F104 F14	F118 G1	F131 B14	I108 E11	I121 B13	I138 E3	I152 D11	I169 A4	I189 C11
1103 H14	1308 G1	2106 D6	2119 D11	2132 F8	2167 B3	2181 H3	3110 G3	3123 F7	3136 G5	3150 F8	3163 G10	3185 B2	5101 G2	6107 D7	6130 E2	6155 G11	7113 E13	9101 D12	F106 B14	F119 G1	F132 B13	I109 G5	I122 F5	I139 E3	I154 E5	I170 F10	I190 D8
1104 H13	1M09 F14	2107 E9	2120 D11	2133 G10	2168 E4	2182 G4	3111 D9	3124 D13	3137 G6	3151 G8	3164 C12	3186 B4	5102 B9	6108 D7	6132 E2	7101 D7	7121 D5	9102 F11	F107 F14	F120 F4	F133 G14	I110 G5	I123 F8	I140 C9	I156 G9	I171 G10	I191 B11
1105 H14	1M59 C14	2108 C9	2121 D11	2134 C11	2169 E2	2183 C11	3112 D8	3125 E12	3138 F8	3152 F6	3165 G11	3187 E4	5103 G4	6115 D11	6136 F5	7102 D9	7122 D4	9103 D7	F108 G14	F121 G4	F134 G14	I111 F6	I124 F8	I141 C11	I157 E8	I172 G11	I192 B12
1111 F2	1M90 C14	2109 C10	2122 C11	2140 A10	2170 B5	2184 E6	3113 E8	3126 E12	3139 D6	3153 E11	3166 G11	3188 E2	5104 C9	6116 E11	6137 F5	7103 E6	7124 E5	9120 G13	F109 G14	F122 F5	F135 D8	I112 G6	I125 E9	I142 B9	I160 E4	I180 B6	I193 B11
1113 G2	1M95 F14	2110 H10	2123 D11	2141 B10	2171 E2	3101 G6	3114 G3	3127 B8	3140 B9	3154 E12	3167 H11	3189 E3	5110 G7	6117 E11	6138 G5	7104 C2	7125-1 E3	9137 G6	F110 G14	F123 H5	F136 B9	I113 F7	I126 F8	I144 B10	I161 E4	I181 B6	I194 B10
1115 G4	1T59 E14	2111 B8	2124 E11	2142 B11	2172 E3	3102 G2	3115 H11	3128 F5	3141 B10	3155 B10	3168 H11	3190 E4	5120 C6	6118 F11	6140 D7	7105 F9	7125-2 E5	9180 B14	F111 G14	F124 E2	I101 D7	I114 G6	I127 F8	I144 B10	I162 D5	I182 H12	I195 B10
1120 H14	1T60 D14	2112 G5	2125 E11	2151 E7	2173 E4	3103 G4	3116 H10	3129 B13	3142 A10	3156 B10	3169 H11	3191 E4	5121 C11	6120 D11	6141 D7	7106 B5	7126-1 A2	9181 B14	F112 G13	F125 D2	I102 F2	I115 E9	I130 D1	I145 B10	I163 D5	I183 C14	I196 D12
1130 G7	1T90 B14	2113 D6	2126 E11	2161 G11	2175 E3	3104 B5	3117 F3	3130 D6	3143 A11	3157 B12	3170 E5	3192 E3	6101 F4	6121 B6	6142 E6	7107 E7	7126-2 A4	9182 F14	F113 G14	F126 D6	I103 D7	I116 G5	I131 E1	I146 A11	I164 D5	I184 C14	I197 E12
1140 C10	2101 G2	2114 B12	2127 E11	2162 G11	2176 B6	3105 C5	3118 G9	3131 E6	3144 B11	3158 E4	3171 D6	3193 A4	6102 D6	6122 E2	6143 F8	7108 D6	7140 A10	9183 F14	F114 G1	F127 E6	I104 F4	I117 D9	I132 E1	I147 A11	I165 B2	I185 D14	
1141 D10	2102 G3	2115 G13	2128 E9	2163 H10	2177 E4	3106 D12	3119 D9	3132 G4	3145 A12	3159 B12	3170 E5	3194 B3	6103 C10	6123 E2	6144 A13	7109 B11	7141-1 B9	9184 D14	F115 F1	F128 E11	I105 G4	I118 C9	I134 E2	I148 A13	I166 B3	I186 D14	
1150 H12	2103 G6	2116 E12	2129 D7	2164 B4	2178 D4	3107 D8	3120 F7	3133 F7	3147 E7	3160 G10	3182 D3	3195 D4	6104 C10	6124 B6	6145 D8	7110 B11	7141-2 A10	F102 E13	F116 G1	F129 D12	I106 C11	I119 B9	I135 D2	I150 E9	I167 B2	I187 D14	



Main Power Supply IPB 42: HV Inverter



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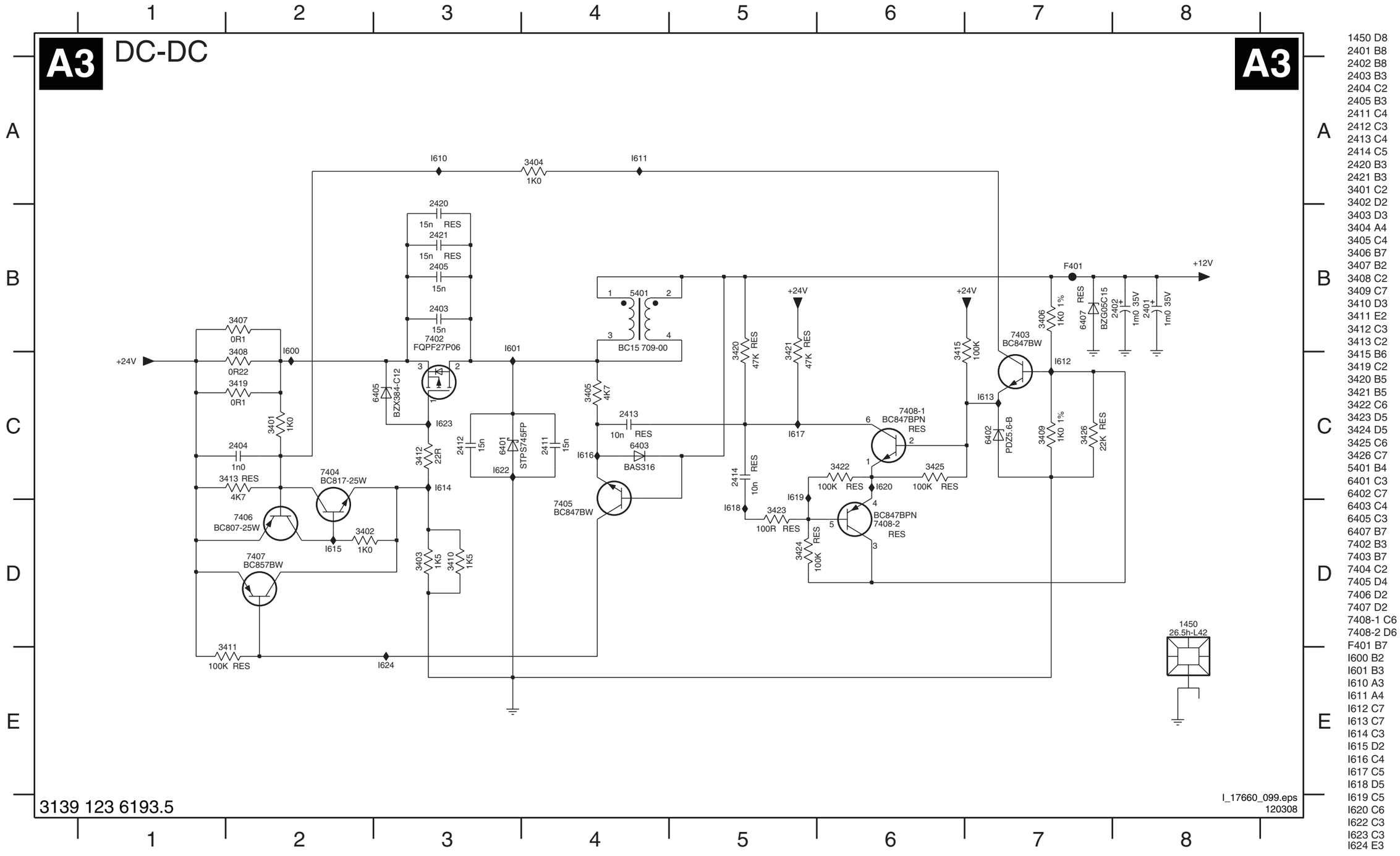
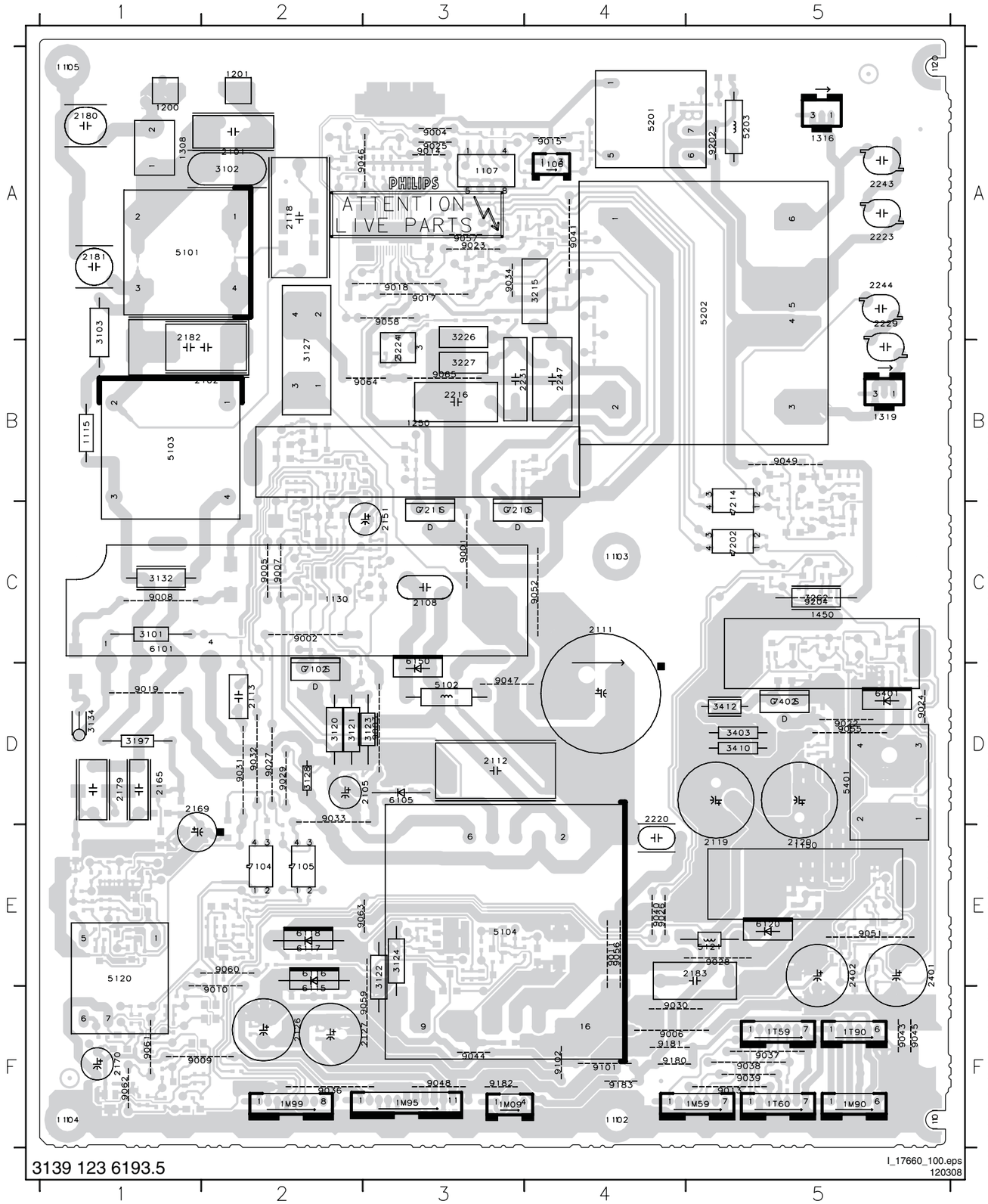
1107-3 A6	3249 D1	F239 C5
1107-4 A6	3250 A6	I206 B4
1250 F2	3251 A6	I207 B4
1316 B9	3252 A6	I211 C4
1319 C9	3253 A6	I214 C6
1M99 E9	3254 D2	I222 D8
2201 C1	3255 E5	I231 F6
2204 C1	3256 F5	I232 E6
2205 C1	3257 E7	I233 F8
2206 C1	3258 E6	I234 F6
2207 C5	3259 E7	I239 C7
2208 C5	3260 E6	I247 D4
2211 C1	3261 E6	I248 E1
2212 E4	3262 E8	I249 E1
2213 D5	3265 A9	I250 C2
2214 D8	3266 B9	I251 D2
2216 C7	3270 B5	I252 D1
2217 F8	3271 B7	I253 D2
2218 F7	3272 B6	I254 D2
2220 C8	3273 C7	I255 E6
2221 B3	5201 A8	I256 E6
2222 B1	5202 B8	I257 E7
2223 B9	5203 A9	I259 E7
2224 C4	6201 C5	I260 E2
2225 D2	6202 C5	I261 A1
2226 E1	6203 D7	I262 A2
2229 C9	6204 D8	I263 A2
2231 C7	6206 A3	I264 A3
2232 D7	6207 A4	I265 C5
2233 D8	6208 D6	I266 C2
2235 C4	6209 B4	I268 C2
2236 C7	6210 D2	I269 E5
2237 C5	6211 B5	I271 A7
2238 D7	6212 C5	I272 A7
2240 C6	6213 B4	I273 A9
2241 C6	6214 C4	I274 B7
2242 B9	6215 A9	I275 C7
2243 B9	6260 E6	I276 C7
2244 D9	7201 B3	I277 C7
2245 B7	7202 F5	
2246 C6	7203 E6	
2247 C8	7210 B6	
3201 B1	7211 C6	
3202 C1	7212 E1	
3203 D2	7213 F6	
3204 B6	7214 D5	
3205 B5	7215 D2	
3206 F6	7216 E7	
3207 C5	7217 E7	
3208 C6	7220 A9	
3210 B6	9201 A3	
3211 E4	9202 A8	
3213 C6	9204 E8	
3215 A5	F201 B9	
3216 A2	F202 C9	
3217 A2	F203 C9	
3218 A2	F204 E9	
3219 A3	F205 E9	
3221 F7	F206 D5	
3222 F6	F207 D6	
3223 F8	F208 F9	
3224 C6	F209 B6	
3225 C7	F210 C5	
3226 C7	F211 B6	
3227 C7	F212 C7	
3231 D8	F213 D4	
3232 B7	F214 F4	
3233 B8	F215 F4	
3234 D1	F216 B9	
3235 D1	F217 B9	
3236 E3	F218 C9	
3237 E1	F219 C9	
3238 E1	F220 E8	
3239 D6	F221 C8	
3240 D6	F225 A6	
3241 D6	F226 A6	
3242 D4	F227 A6	
3243 F8	F228 A6	
3244 D5	F229 E9	
3245 E1	F231 E5	

Main Power Supply IPB 42: DC / DC



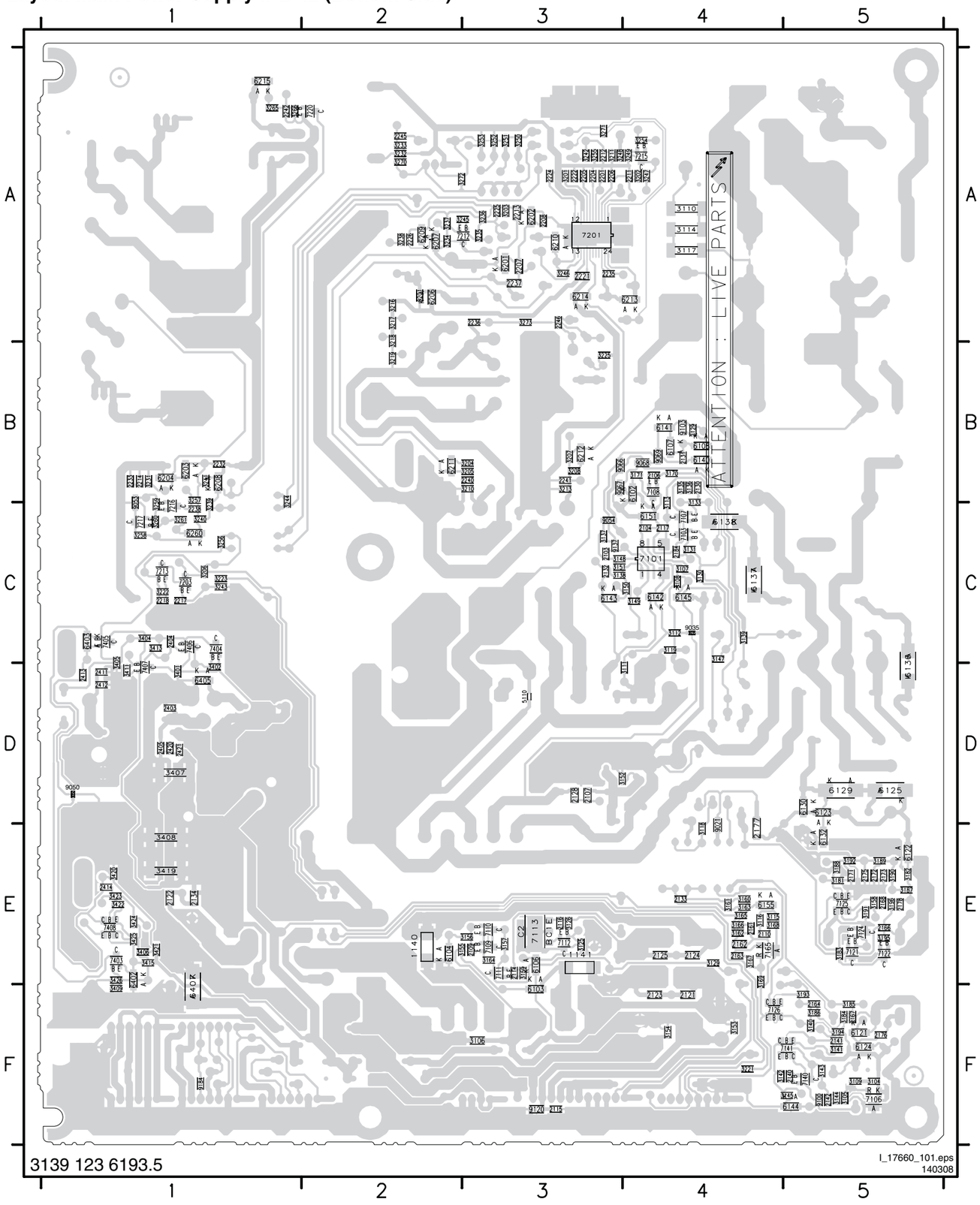
1450 D8
2401 B8
2402 B8
2403 B3
2404 C2
2405 B3
2411 C4
2412 C3
2413 C4
2414 C5
2420 B3
2421 B3
3401 C2
3402 D2
3403 D3
3404 A4
3405 C4
3406 B7
3407 B2
3408 C2
3409 C7
3410 D3
3411 E2
3412 C3
3413 C2
3415 B6
3419 C2
3420 B5
3421 B5
3422 C6
3423 D5
3424 D5
3425 C6
3426 C7
5401 B4
6401 C3
6402 C7
6403 C4
6405 C3
6407 B7
7402 B3
7403 B7
7404 C2
7405 D4
7406 D2
7407 D2
7408-1 C6
7408-2 D6
F401 B7
I600 B2
I601 B3
I610 A3
I611 A4
I612 C7
I613 C7
I614 C3
I615 D2
I616 C4
I617 C5
I618 D5
I619 C5
I620 C6
I622 C3
I623 C3
I624 E3

Layout Main Power Supply IPB 42 (Top Side)



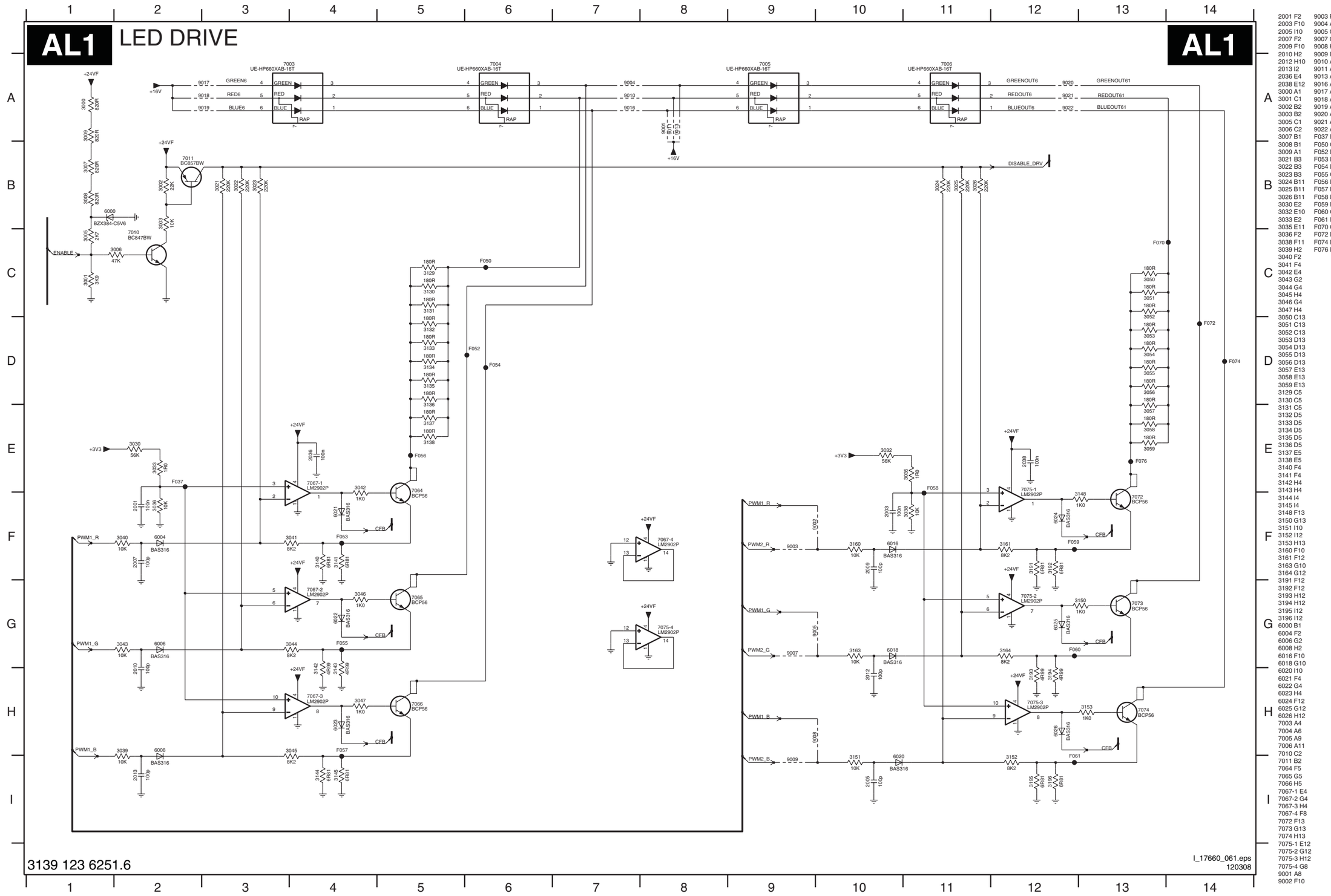
1101	F5	3262	C5	9051	E5
1102	F4	3403	D5	9052	C4
1103	C4	3410	D5	9055	D5
1104	F1	3412	D5	9056	E4
1105	A1	5101	A1	9057	A3
1106	A4	5102	D3	9058	A3
1107	A3	5103	C2	9059	F2
1115	B1	5104	E3	9060	E2
1120	A5	5120	F1	9061	F1
1130	C2	5121	E5	9062	F1
1150	E5	5201	A5	9063	E2
1200	A1	5202	A5	9064	B3
1201	A2	5203	A5	9065	B3
1250	B3	5401	D5	9101	F4
1308	A1	6101	D2	9102	F4
1316	A5	6105	D3	9180	F4
1319	B5	6115	F2	9181	F4
1450	C5	6116	F2	9182	F3
1M09	F4	6117	E2	9183	F4
1M59	F5	6118	E2	9202	A5
1M90	F5	6120	E5	9204	C5
1M95	F3	6150	D3		
1M99	F2	6401	D5		
1T59	F5	7102	D2		
1T60	F5	7104	E2		
1T90	F5	7105	E2		
2101	A2	7202	C5		
2102	B1	7210	C4		
2105	D3	7211	C3		
2108	C3	7214	B5		
2111	C4	7402	D5		
2112	D3	9001	C3		
2113	D2	9002	C2		
2118	A2	9003	D3		
2119	D5	9004	A3		
2120	D5	9005	C2		
2126	F2	9006	F5		
2127	F3	9007	C2		
2151	C3	9008	C1		
2165	E1	9009	F1		
2169	D1	9010	F2		
2170	F1	9011	E4		
2179	E1	9013	F5		
2180	A1	9014	A3		
2181	A1	9015	A4		
2182	B1	9017	A3		
2183	E5	9018	A3		
2216	B3	9019	D1		
2220	E4	9022	D5		
2223	A5	9023	A3		
2229	A5	9024	D5		
2231	A3	9025	A3		
2243	A5	9026	E4		
2244	A5	9027	D2		
2247	A4	9028	E5		
2401	E5	9029	D2		
2402	E5	9030	F4		
3101	C1	9031	D2		
3102	A1	9032	D2		
3103	B1	9033	E2		
3120	D2	9034	A3		
3121	D2	9036	F2		
3122	F3	9037	F5		
3123	D3	9038	F5		
3124	E3	9039	F5		
3127	B2	9040	E4		
3128	D2	9041	A4		
3132	C1	9043	F5		
3134	D1	9044	F3		
3197	D1	9045	F5		
3215	A4	9046	A3		
3224	A3	9047	D3		
3226	A3	9048	F3		
3227	B3	9049	B5		

Layout Main Power Supply IPB 42 (Bottom Side)



1140	E2	2412	D1	3192	E5	3421	E1	7216	C1
1141	F3	2413	D1	3193	F5	3422	E1	7217	C1
2103	C3	2414	E1	3194	F5	3423	E1	7220	A2
2104	C4	2420	D1	3195	E5	3424	E1	7403	E1
2106	B4	2421	D1	3196	E5	3425	E1	7404	C1
2107	D3	3104	F5	3201	A3	3426	E1	7405	C1
2109	E3	3105	F5	3202	A4	5110	D3	7406	C1
2110	E4	3106	F3	3203	A3	6102	B4	7407	D1
2114	E3	3107	C4	3204	B3	6103	F3	7408	E1
2115	F3	3108	C4	3205	B3	6104	E2	9021	E4
2116	E3	3109	F5	3206	C1	6106	E3	9035	C4
2117	C4	3110	A4	3207	B3	6107	B4	9050	D1
2121	F4	3111	D4	3208	B3	6108	B4	9053	C1
2122	E1	3112	C4	3210	B3	6121	F5	9054	C3
2123	F4	3113	C4	3211	A3	6122	E5	9066	B3
2124	E4	3114	A4	3213	B3	6123	D5	9067	B3
2125	E4	3115	E4	3216	A2	6124	F5	9068	B4
2128	D3	3116	E4	3217	A2	6125	D5	9069	B4
2129	B4	3117	A4	3218	A2	6129	D5	9100	F5
2130	B4	3118	E4	3219	B2	6130	D5	9103	B4
2131	B4	3119	C4	3221	F4	6132	E5	9120	F3
2132	C3	3125	E3	3222	C1	6136	D5	9137	C3
2133	E4	3126	E3	3223	C1	6137	C4	9184	F1
2134	E1	3129	E4	3225	B3	6138	C4	9201	A2
2140	F5	3130	C4	3231	B1	6140	B4		
2141	F5	3131	C4	3232	A2	6141	B4		
2142	F5	3133	C4	3233	A2	6142	C4		
2161	E4	3135	B4	3234	A2	6143	C3		
2162	E4	3136	B4	3235	A3	6144	F4		
2163	E4	3137	C3	3236	A3	6145	C4		
2164	F5	3138	C3	3237	A2	6151	C4		
2166	E5	3139	C4	3238	A2	6155	E4		
2167	F5	3140	F5	3239	C1	6201	A3		
2168	E5	3141	F5	3240	C1	6202	A3		
2171	E5	3142	F4	3241	B1	6203	B1		
2172	E5	3143	F5	3242	A3	6204	B1		
2173	E5	3144	F5	3243	C1	6206	A2		
2175	E5	3145	F5	3244	B1	6207	A2		
2176	F5	3147	C4	3245	A3	6208	B1		
2177	D4	3148	C3	3246	A3	6209	A2		
2178	E5	3149	C4	3247	A4	6210	A3		
2184	C4	3150	C4	3248	A3	6211	B3		
2201	A3	3151	C3	3249	A4	6212	B3		
2204	A3	3152	D3	3250	A3	6213	A4		
2205	A3	3153	F4	3251	A3	6214	A3		
2206	A3	3154	F4	3252	A3	6215	A1		
2207	A3	3155	E2	3253	A3	6260	C1		
2208	A3	3156	E3	3254	A4	6402	E1		
2211	A4	3157	E3	3255	A3	6403	C1		
2212	A3	3158	E5	3256	C1	6405	D1		
2213	A3	3159	E3	3257	B1	6407	F1		
2214	B1	3160	E4	3258	C1	7101	C3		
2217	C1	3161	E4	3259	C1	7103	C4		
2218	C1	3162	E4	3260	C1	7106	F5		
2221	A3	3163	E4	3261	C1	7107	C4		
2222	A3	3164	E3	3265	A1	7108	B4		
2224	A3	3165	E4	3266	A1	7109	E3		
2225	A3	3166	E4	3270	A2	7110	E3		
2226	A2	3167	E4	3271	A3	7111	E3		
2232	B1	3168	E4	3272	A2	7112	E3		
2233	B1	3169	E4	3273	A3	7113	E3		
2235	A3	3170	B4	3401	D1	7121	E5		
2236	A3	3171	B4	3402	D1	7122	E5		
2237	A3	3181	E5	3404	C1	7124	E5		
2238	C1	3182	E5	3405	D1	7125	E5		
2240	B3	3183	E5	3406	E1	7126	F4		
2241	B3	3184	F5	3407	D1	7140	F5		
2242	A1	3185	F5	3408	E1	7141	F5		
2245	A2	3186	F5	3409	F1	7165	E5		
2246	A3	3187	E5	3411	D1	7201	A4		
2403	D1	3188	E5	3413	C1	7203	C1		
2404	C1	3189	E5	3415	E1	7212	A3		
2405	D1	3190	E5	3419	E1	7213	C1		
2411	D1	3191	E5	3420	E1	7215	A4		

4 LED Back UPEC Panel: LED Drive



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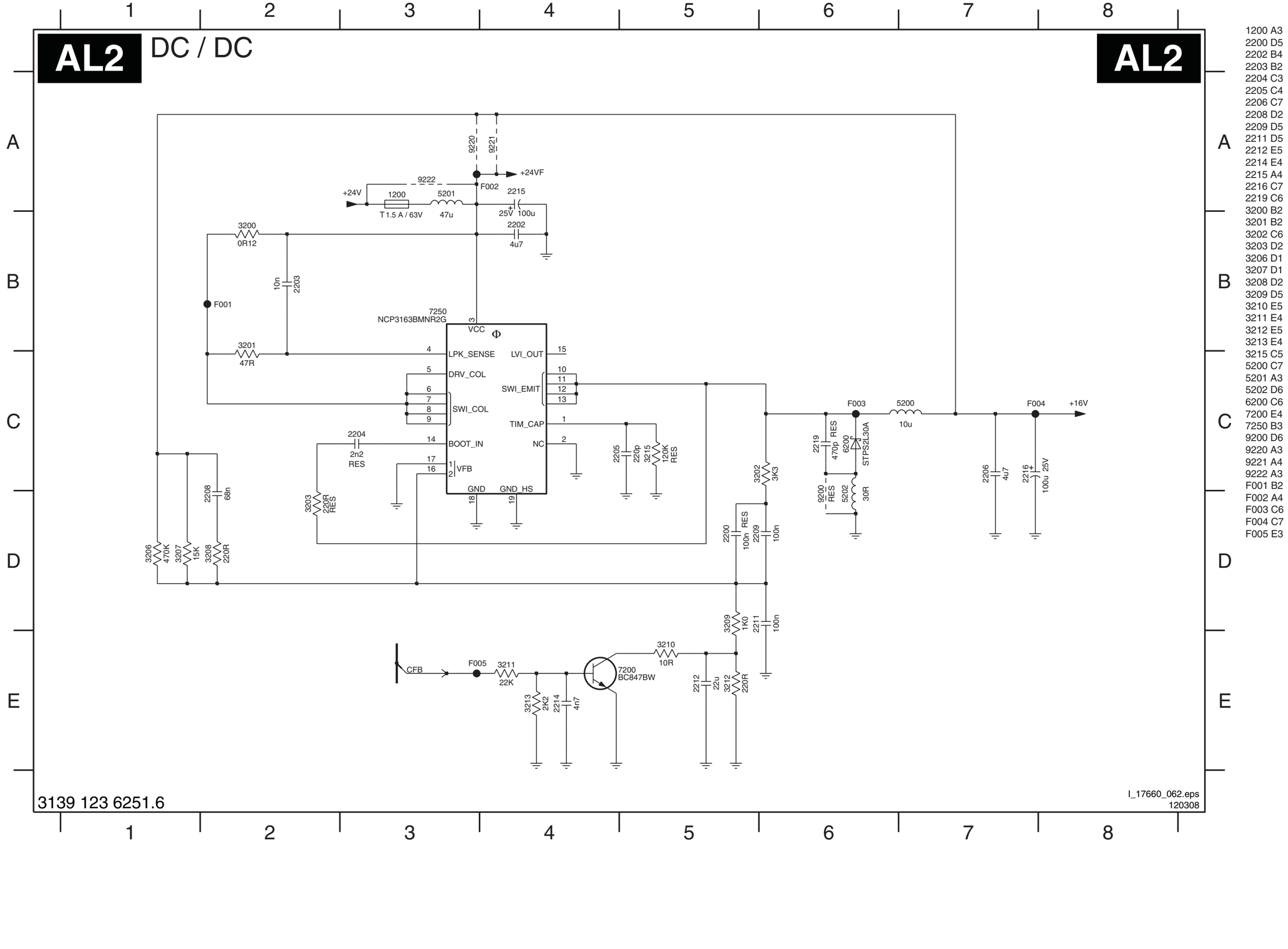
120308

2001 F2
2003 F10
2005 I10
2007 F2
2009 F10
2010 H2
2012 H10
2013 I2
2036 E4
2038 E12
3000 A1
3001 C1
3002 B2
3003 B2
3005 C1
3006 C2
3007 B1
3008 B1
3009 A1
3021 B3
3022 B3
3023 B3
3024 B11
3025 B11
3026 B11
3030 E2
3032 E10
3033 E2
3035 E11
3036 F2
3038 F11
3039 H2
3040 F2
3041 F4
3042 E4
3043 G2
3044 G4
3045 H4
3046 G4
3047 H4
3050 C13
3051 C13
3052 C13
3053 D13
3054 D13
3055 D13
3056 D13
3057 E13
3058 E13
3059 E13
3129 C5
3130 C5
3131 C5
3132 D5
3133 D5
3134 D5
3135 D5
3136 D5
3137 E5
3138 E5
3140 F4
3141 F4
3142 H4
3143 H4
3144 I4
3145 I4
3148 F13
3150 G13
3151 I10
3152 I12
3153 H13
3160 F10
3161 F12
3163 G10
3164 G12
3191 F12
3192 F12
3193 H12
3194 H12
3195 I12
3196 I12
6000 B1
6004 F2
6006 G2
6008 H2
6016 F10
6018 G10
6020 I10
6021 F4
6022 G4
6023 H4
6024 F12
6025 G12
6026 H12
7003 A4
7004 A6
7005 A9
7006 A11
7010 C2
7011 B2
7064 F5
7065 G5
7066 H5
7067-1 E4
7067-2 G4
7067-3 H4
7067-4 F8
7072 F13
7073 G13
7074 H13
7075-1 E12
7075-2 G12
7075-3 H12
7075-4 G8
9001 A8
9002 F10
9003 F9
9004 A7
9005 G10
9007 G9
9008 H10
9009 I9
9010 A7
9011 A8
9013 A8
9016 A7
9017 A3
9018 A3
9019 A3
9020 A12
9021 A12
9022 A12
F037 E2
F050 C6
F052 D6
F053 F4
F054 D6
F055 G4
F056 E5
F057 H4
F058 E11
F059 F12
F060 G12
F061 I12
F070 C13
F072 D14
F074 D14
F076 E13

4 LED Back UPEC Panel: DC / DC

AL2 DC / DC AL2



1200 A3
2200 D5
2202 B4
2203 B2
2204 C3
2205 C4
2206 C7
2208 D2
2209 D5
2211 D5
2212 E5
2214 E4
2215 A4
2216 C7
2219 C6
3200 B2
3201 B2
3202 C6
3203 D2
3206 D1
3207 D1
3208 D2
3209 D5
3210 E5
3211 E4
3212 E5
3213 E4
3215 C5
5200 C7
5201 A3
5202 D6
6200 C6
7200 E4
7250 B3
9200 D6
9220 A3
9221 A4
9222 A3
F001 B2
F002 A4
F003 C6
F004 C7
F005 E3

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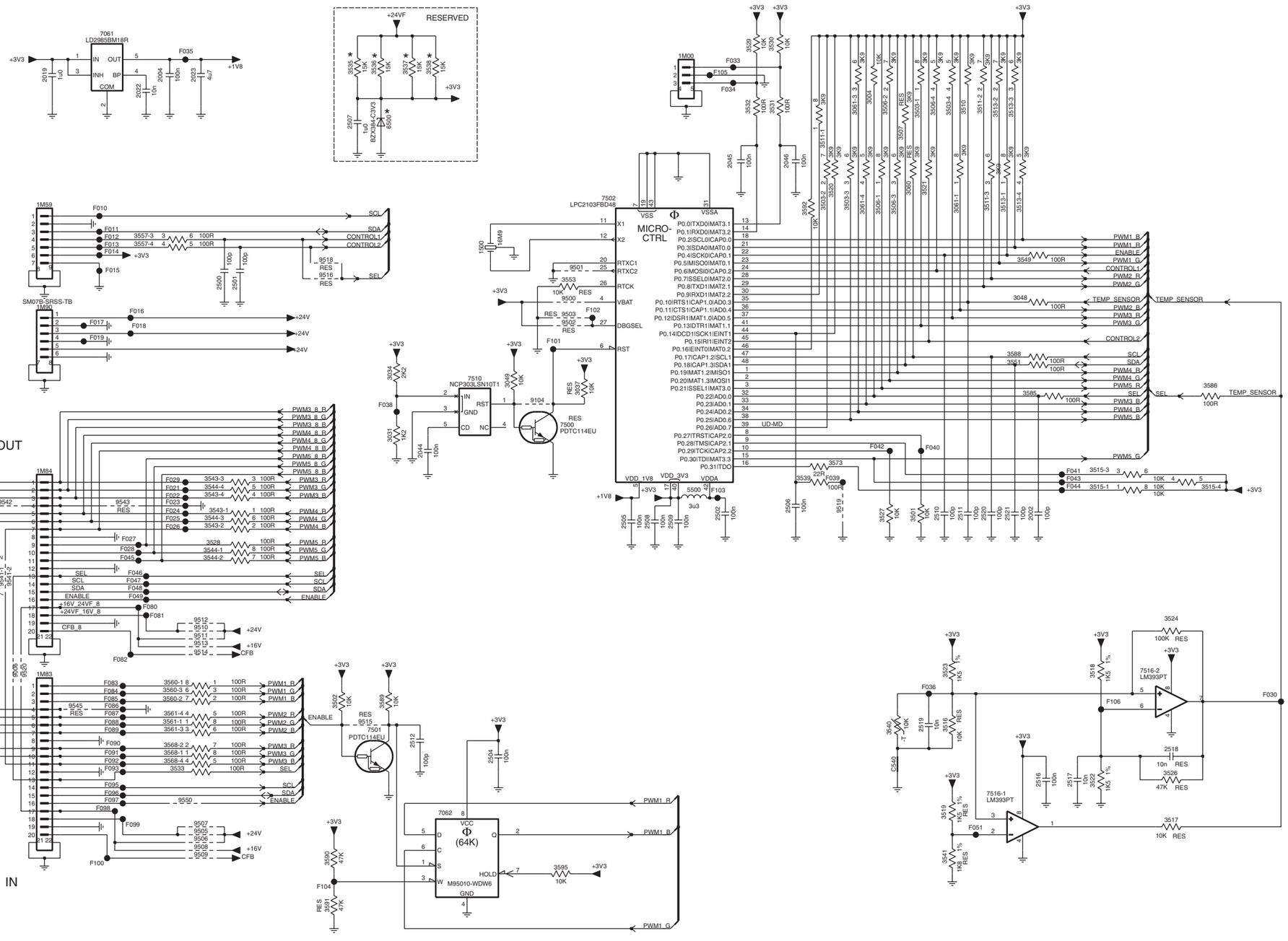
4 LED Back UPEC Panel: uC Block

AL3 MICROCONTROLLER BLOCK

AL3



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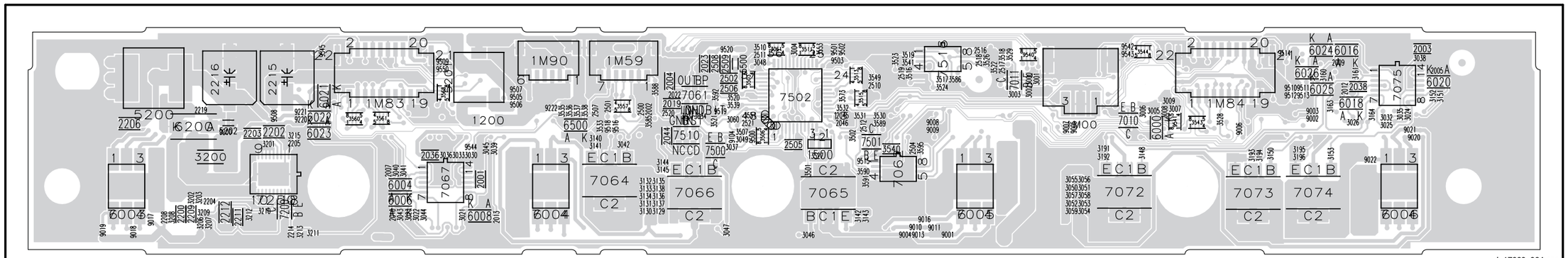
1500 C6	3589 G5
1M00 A8	3590 I5
1M59 C2	3591 I5
1M83 G2	3592 C9
1M84 E2	3595 I7
1M90 D2	5500 E8
2002 F11	6500 B5
2004 B3	7061 A3
2019 B2	7062 H6
2022 B3	7500 E7
2023 B4	7501 H5
2044 E6	7502 C7
2045 B8	7510 D6
2046 B9	7516-1 H11
2500 D4	7516-2 G12
2501 D4	9006 G2
2502 F8	9104 E7
2504 H6	9500 D7
2505 F7	9501 C7
2506 F9	9502 D7
2507 B5	9503 D7
2508 F8	9505 I4
2509 F8	9506 I4
2510 F10	9507 H4
2511 F11	9508 I4
2512 H6	9509 I4
2516 H11	9510 G4
2517 H12	9511 G4
2518 H12	9512 G4
2519 H10	9513 G4
2520 F11	9514 G4
2521 F11	9515 H5
3004 B10	9516 C5
3031 E5	9518 C5
3034 D5	9519 F9
3037 E7	9520 G2
3048 D11	9540-1 F2
3049 D6	9540-2 F2
3060 C10	9540-3 F2
3061-1 C11	9540-4 F1
3061-3 B10	9541-1 F2
3061-4 C10	9541-2 F2
3501 F10	9541-3 F1
3502 G5	9541-4 F1
3503-1 B10	9542 F2
3503-2 C9	9543 F3
3503-3 C10	9544 G1
3503-4 B10	9545 G2
3506-1 C10	9550 H3
3506-2 B10	C540 H10
3506-3 C10	F010 C3
3506-4 B10	F011 C3
3507 B10	F012 C3
3510 B11	F013 C3
3511-1 B9	F014 C3
3511-2 B11	F015 C3
3511-3 C11	F016 D3
3513-1 C11	F017 D3
3513-2 B11	F018 D3
3513-3 B11	F019 D3
3513-4 C11	F021 E3
3515-1 E12	F022 F3
3515-3 E12	F023 F3
3515-4 E13	F024 F3
3516 H10	F025 F3
3517 H12	F026 F3
3518 G12	F027 F3
3519 H10	F028 F3
3520 C9	F029 E3
3521 C10	F030 G13
3522 H12	F033 B8
3523 G10	F034 B8
3524 G12	F035 A3
3526 H12	F036 G10
3527 F10	F038 E5
3528 F4	F039 E9
3529 A9	F040 E10
3530 A9	F041 E12
3531 B9	F042 E10
3532 B9	F043 E12
3533 H3	F044 E12
3535 B5	F045 F3
3536 B5	F046 F3
3537 B5	F047 F3
3538 B6	F048 F3
3539 E9	F049 F3
3540 H10	F051 H11
3541 I10	F080 G3
3543-1 F4	F081 G3
3543-2 F4	F082 G3
3543-3 E4	F083 G3
3543-4 E4	F084 G3
3544-1 F4	F085 G3
3544-2 F4	F086 G3
3544-3 F4	F087 G3
3544-4 E4	F088 H3
3549 C11	F089 H3
3551 D11	F090 H3
3553 D7	F091 H3
3557-3 C3	F092 H3
3557-4 C3	F093 H3
3560-1 G3	F095 H3
3560-2 G3	F096 H3
3560-3 G3	F097 H3
3561-1 H3	F098 H3
3561-3 H3	F099 I3
3561-4 G3	F100 I3
3568-1 H3	F101 D7
3568-2 H3	F102 D7
3568-4 H3	F103 E8
3573 E9	F104 I5
3585 E11	F105 B8
3586 D13	F106 G12
3588 D11	

Layout 4 LED Back UPEC Panel (Top Side)

1200	--	2005	--	2044	--	2211	--	2506	--	2520	--	3009	--	3034	--	3045	--	3056	--	3134	--	3148	--	3193	--	3209	--	3510	--	3523	--	3536	--	3557	--	3592	--	6018	--	7004	--	7072	--	9001	--	9013	--	9221	--	9510	--	9541	--
1500	--	2007	--	2045	--	2212	--	2507	--	2521	--	3021	--	3035	--	3046	--	3057	--	3135	--	3150	--	3194	--	3210	--	3511	--	3524	--	3537	--	3560	--	3595	--	6020	--	7005	--	7073	--	9002	--	9016	--	9222	--	9511	--	9542	--
1M00	--	2009	--	2046	--	2214	--	2508	--	3000	--	3022	--	3036	--	3047	--	3058	--	3136	--	3151	--	3195	--	3211	--	3513	--	3526	--	3538	--	3561	--	5200	--	6021	--	7006	--	7074	--	9003	--	9017	--	9500	--	9512	--	9543	--
1M59	--	2010	--	2200	--	2215	--	2509	--	3001	--	3023	--	3037	--	3048	--	3059	--	3137	--	3152	--	3196	--	3212	--	3515	--	3527	--	3539	--	3568	--	5201	--	6022	--	7010	--	7075	--	9004	--	9018	--	9501	--	9513	--	9544	--
1M83	--	2012	--	2202	--	2216	--	2510	--	3002	--	3024	--	3038	--	3049	--	3060	--	3138	--	3153	--	3200	--	3213	--	3516	--	3528	--	3540	--	3573	--	5202	--	6023	--	7011	--	7200	--	9005	--	9019	--	9502	--	9514	--	9545	--
1M84	--	2013	--	2203	--	2219	--	2511	--	3003	--	3025	--	3039	--	3050	--	3061	--	3140	--	3160	--	3201	--	3215	--	3517	--	3529	--	3541	--	3585	--	5500	--	6024	--	7061	--	7250	--	9006	--	9020	--	9503	--	9515	--	9550	--
1M90	--	2019	--	2204	--	2500	--	2512	--	3004	--	3026	--	3040	--	3051	--	3129	--	3141	--	3161	--	3202	--	3501	--	3518	--	3530	--	3543	--	3586	--	6000	--	6025	--	7062	--	7500	--	9007	--	9021	--	9505	--	9516	--		
2001	--	2022	--	2205	--	2501	--	2516	--	3005	--	3030	--	3041	--	3052	--	3130	--	3142	--	3163	--	3203	--	3502	--	3519	--	3531	--	3544	--	3588	--	6004	--	6026	--	7064	--	7501	--	9008	--	9022	--	9506	--	9518	--		
2002	--	2023	--	2206	--	2502	--	2517	--	3006	--	3031	--	3042	--	3053	--	3131	--	3143	--	3164	--	3206	--	3503	--	3520	--	3532	--	3549	--	3589	--	6006	--	6200	--	7065	--	7502	--	9009	--	9104	--	9507	--	9519	--		
2003	--	2036	--	2208	--	2504	--	2518	--	3007	--	3032	--	3043	--	3054	--	3132	--	3144	--	3191	--	3207	--	3506	--	3521	--	3533	--	3551	--	3590	--	6008	--	6500	--	7066	--	7510	--	9010	--	9200	--	9508	--	9520	--		
2004	--	2038	--	2209	--	2505	--	2519	--	3008	--	3033	--	3044	--	3055	--	3133	--	3145	--	3192	--	3208	--	3507	--	3522	--	3535	--	3553	--	3591	--	6016	--	7003	--	7067	--	7516	--	9011	--	9220	--	9509	--	9540	--		



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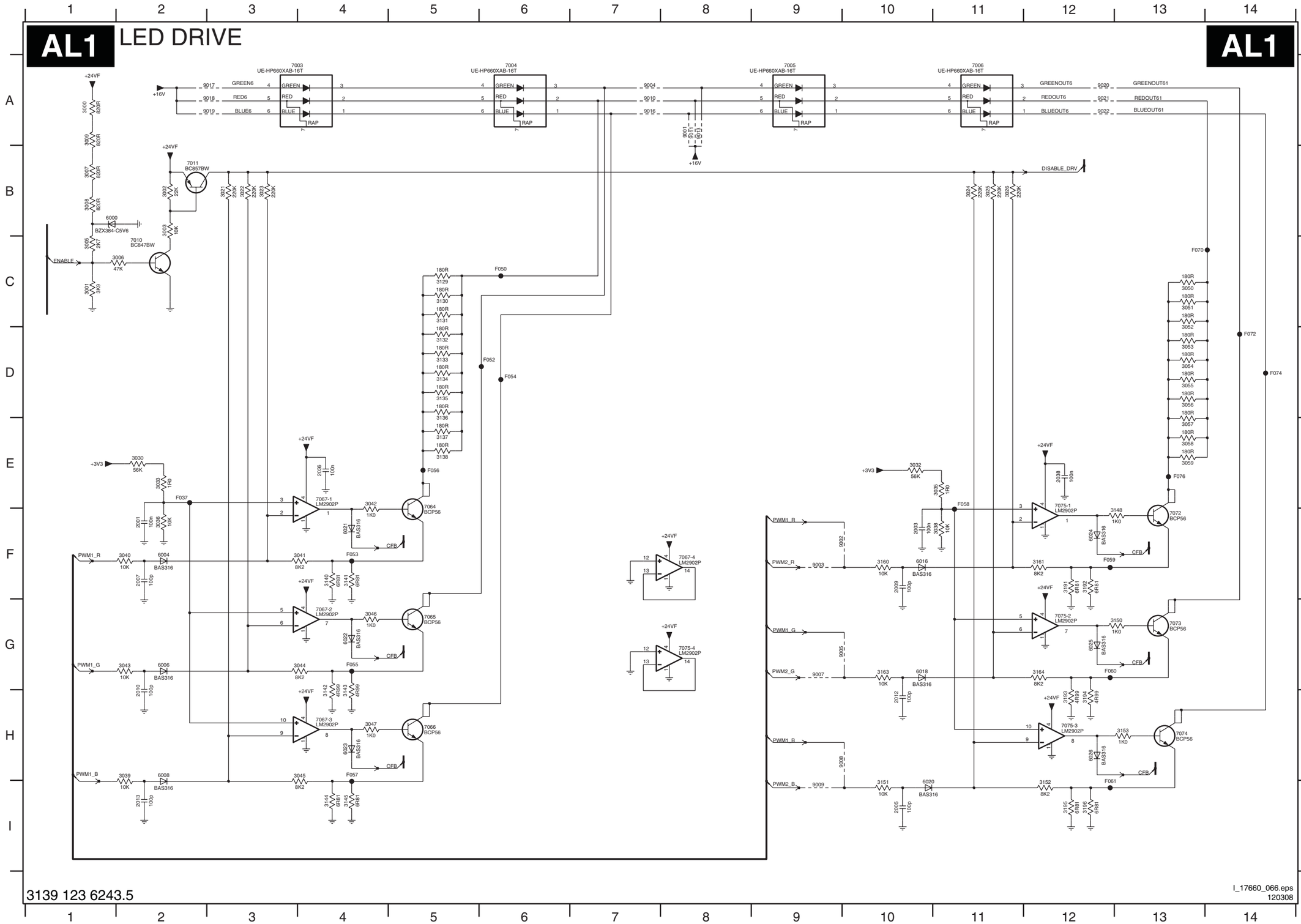
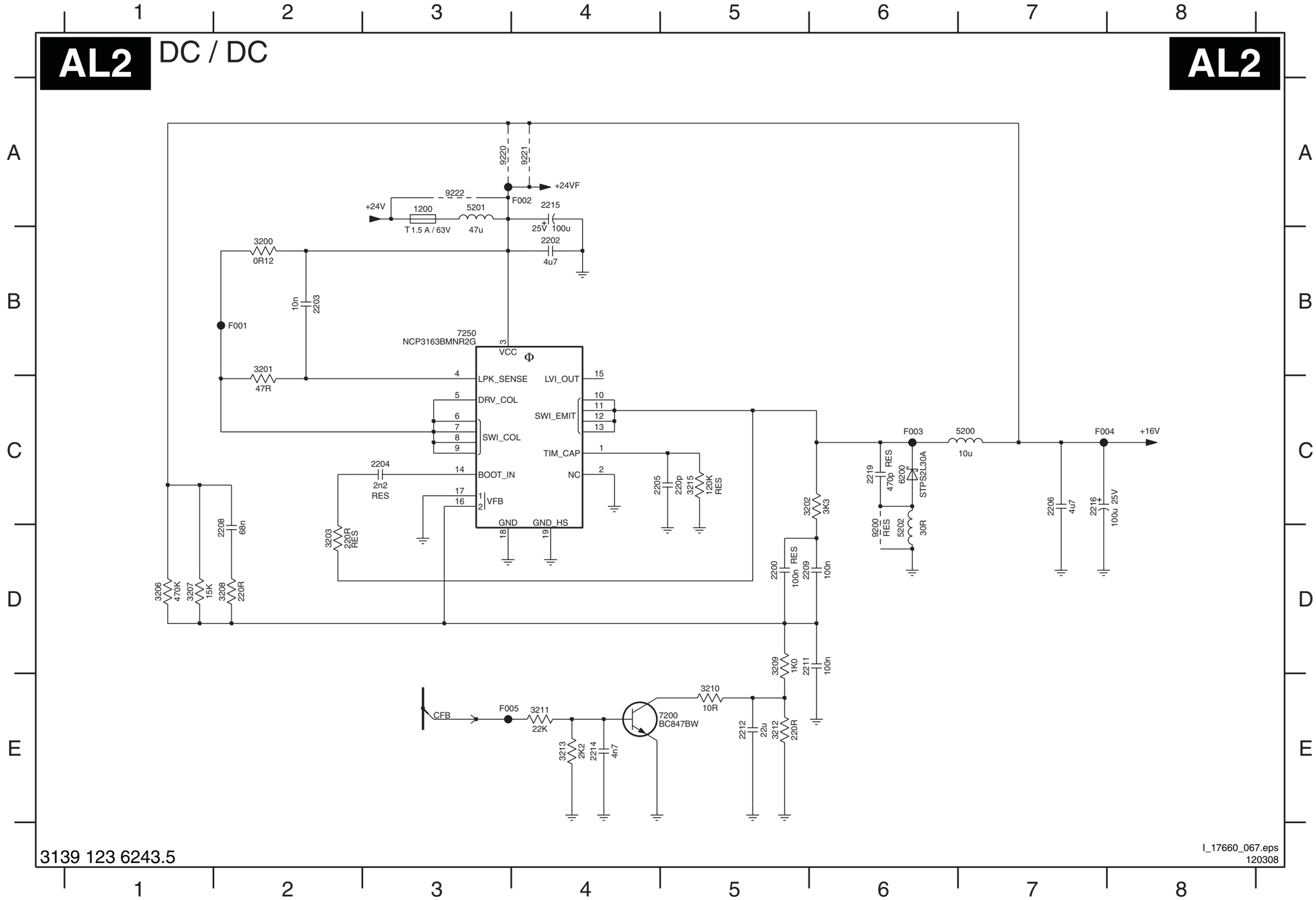
6 LED Back UPEC Panel: LED Drive



2001 F2
2003 F10
2005 I10
2007 F2
2009 F10
2010 H2
2012 H10
2013 I2
2036 E4
2038 E12
3000 A1
3001 C1
3002 B2
3003 B2
3005 C1
3006 C2
3007 B1
3008 B1
3009 A1
3021 B3
3022 B3
3023 B3
3024 B11
3025 B11
3026 B11
3030 E2
3032 E10
3033 E2
3035 E11
3036 F2
3038 F11
3039 H2
3040 F2
3041 F4
3042 E4
3043 G2
3044 G4
3045 H4
3046 G4
3047 H4
3050 C13
3051 C13
3052 C13
3053 D13
3054 D13
3055 D13
3056 D13
3057 E13
3058 E13
3059 E13
3129 C5
3130 C5
3131 C5
3132 D5
3133 D5
3134 D5
3135 D5
3136 D5
3137 E5
3138 E5
3140 F4
3141 F4
3142 H4
3143 H4
3144 I4
3145 I4
3148 F13
3150 G13
3151 I10
3152 I12
3153 H13
3160 F10
3161 F12
3163 G10
3164 G12
3191 F12
3192 F12
3193 H12
3194 H12
3195 I12
3196 I12
6000 B1
6004 F2
6006 G2
6008 H2
6016 F10
6018 G10
6020 I10
6021 F4
6022 G4
6023 H4
6024 F12
6025 G12
6026 H12
7003 A4
7004 A6
7005 A9
7006 A11
7010 C2
7011 B2
7064 F5
7065 G5
7066 H5
7067-1 E4
7067-2 G4
7067-3 H4
7067-4 F8
7072 F13
7073 G13
7074 H13
7075-1 E12
7075-2 G12
7075-3 H12
7075-4 G8
9001 A8
9002 F10
9003 F9
9004 A7
9005 G10
9007 G9
9008 H10
9009 I9
9010 A7
9011 A8
9013 A8
9016 A7
9017 A3
9018 A3
9019 A3
9020 A12
9021 A12
9022 A12
F037 E2
F050 C6
F052 D6
F053 F4
F054 D6
F055 G4
F056 E5
F057 H4
F058 E11
F059 F12
F060 G12
F061 I12
F070 C13
F072 D14
F074 D14
F076 E13

6 LED Back UPEC Panel: DC / DC

AL2 DC / DC AL2



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2202 B4
2203 B2
2204 C3
2205 C4
2206 C7
2208 D2
2209 D5
2211 D5
2212 E5
2214 E4
2215 A4
2216 C7
2219 C6
3200 B2
3201 B2
3202 C6
3203 D2
3206 D1
3207 D1
3208 D2
3209 D5
3210 E5
3211 E4
3212 E5
3213 E4
3215 C5
5200 C7
5201 A3
5202 D6
6200 C6
7200 E4
7250 B3
9200 D6
9220 A3
9221 A4
9222 A3
F001 B2
F002 A4
F003 C6
F004 C7
F005 E3

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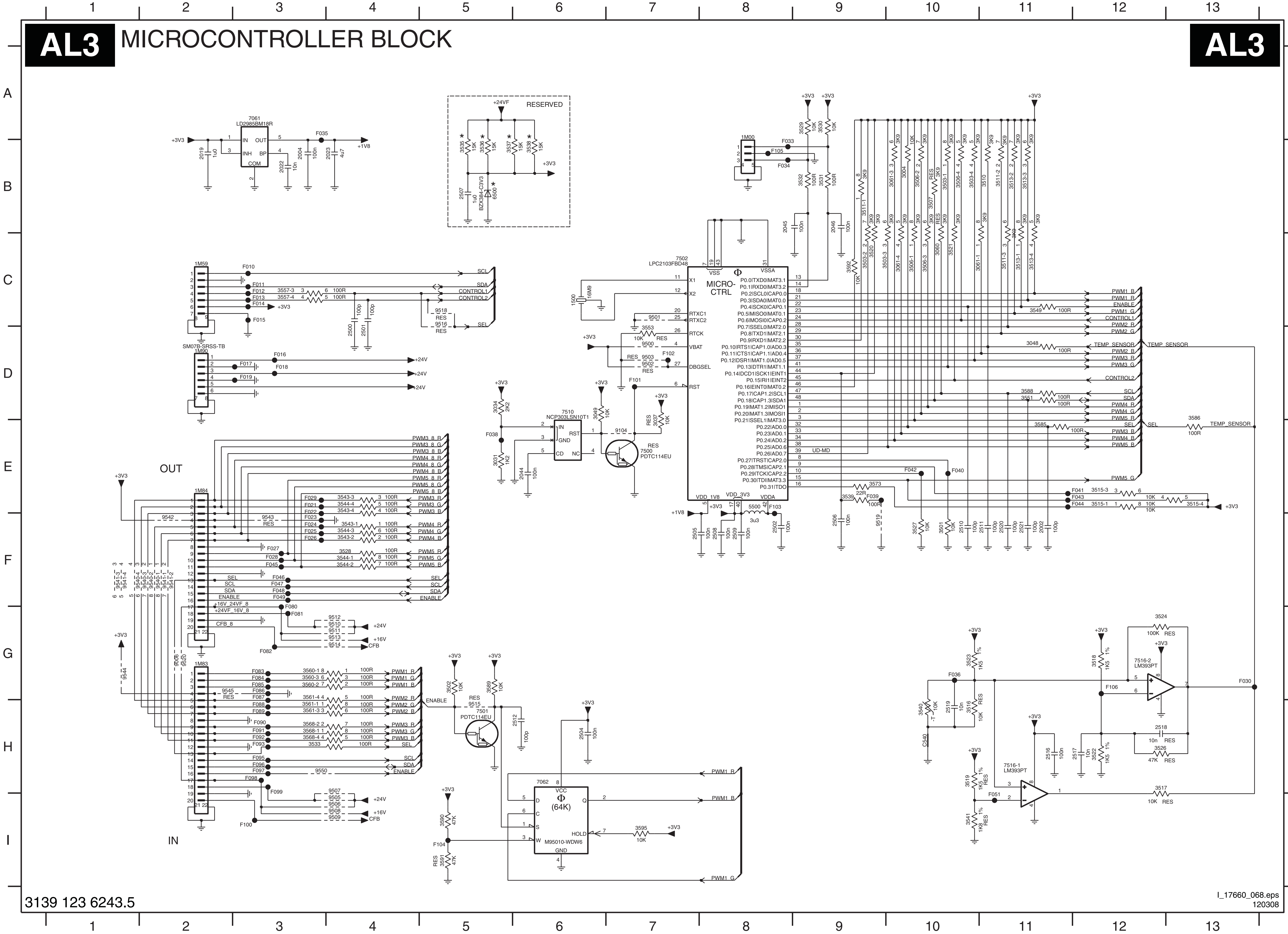
6 LED Back UPEC Panel: uC Block



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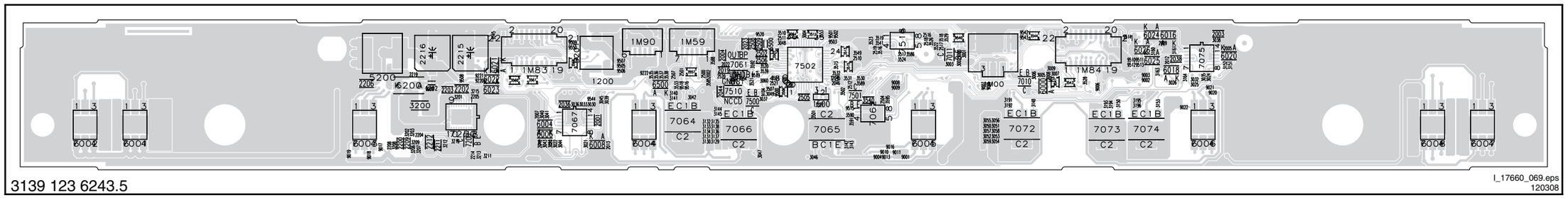
1M00 A8	3590 I5
1M59 C2	3591 I5
1M83 G2	3592 C9
1M84 E2	3595 I7
1M90 D2	5500 E8
2002 F11	6500 B5
2004 B3	7061 A3
2019 B2	7062 H6
2022 B3	7500 E7
2023 B4	7501 H5
2044 E6	7502 C7
2045 B8	7510 D6
2046 B9	7516-1 H11
2500 D4	7516-2 G12
2501 D4	9006 G2
2502 F8	9104 E7
2504 H6	9500 D7
2505 F7	9501 C7
2506 F9	9502 D7
2507 B5	9503 D7
2508 F8	9505 I4
2509 F8	9506 I4
2510 F10	9507 H4
2511 F11	9508 I4
2512 H6	9509 I4
2516 H11	9510 G4
2517 H12	9511 G4
2518 H12	9512 G4
2519 H10	9513 G4
2520 F11	9514 G4
2521 F11	9515 H5
3004 B10	9516 C5
3031 E5	9518 C5
3034 D5	9519 F9
3037 E7	9520 G2
3048 D11	9540-1 F2
3049 D6	9540-2 F2
3060 C10	9540-3 F2
3061-1 C11	9540-4 F1
3061-3 B10	9541-1 F2
3061-4 C10	9541-2 F2
3501 F10	9541-3 F1
3502 G5	9541-4 F1
3503-1 B10	9542 F2
3503-2 C9	9543 F3
3503-3 C10	9544 G1
3503-4 B10	9545 G2
3506-1 C10	9550 H3
3506-2 B10	C540 H10
3506-3 C10	F010 C3
3506-4 B10	F011 C3
3507 B10	F012 C3
3510 B11	F013 C3
3511-1 B9	F014 C3
3511-2 B11	F015 C3
3511-3 C11	F016 D3
3513-1 C11	F017 D3
3513-2 B11	F018 D3
3513-3 B11	F019 D3
3513-4 C11	F021 E3
3515-1 E12	F022 F3
3515-3 E12	F023 F3
3515-4 E13	F024 F3
3516 H10	F025 F3
3517 H12	F026 F3
3518 G12	F027 F3
3519 H10	F028 F3
3520 C9	F029 E3
3521 C10	F030 G13
3522 H12	F033 B8
3523 G10	F034 B8
3524 G12	F035 A3
3526 H12	F036 G10
3527 F10	F038 E5
3528 F4	F039 E9
3529 A9	F040 E10
3530 A9	F041 E12
3531 B9	F042 E10
3532 B9	F043 E12
3533 H3	F044 E12
3535 B5	F045 F3
3536 B5	F046 F3
3537 B5	F047 F3
3538 B6	F048 F3
3539 E9	F049 F3
3540 H10	F051 H11
3541 I10	F080 G3
3543-1 F4	F081 G3
3543-2 F4	F082 G3
3543-3 E4	F083 G3
3543-4 E4	F084 G3
3544-1 F4	F085 G3
3544-2 F4	F086 G3
3544-3 F4	F087 G3
3544-4 E4	F088 H3
3549 C11	F089 H3
3551 D11	F090 H3
3553 D7	F091 H3
3557-3 C3	F092 H3
3557-4 C3	F093 H3
3560-1 G3	F095 H3
3560-2 G3	F096 H3
3560-3 G3	F097 H3
3561-1 H3	F098 H3
3561-3 H3	F099 I3
3561-4 G3	F100 I3
3568-1 H3	F101 D7
3568-2 H3	F102 D7
3568-4 H3	F103 E8
3573 E9	F104 I5
3585 E11	F105 B8
3586 D13	F106 G12
3588 D11	

Layout 6 LED Back UPEC Panel (Top Side)

1200 --	2005 --	2044 --	2211 --	2506 --	2520 --	3009 --	3034 --	3045 --	3056 --	3134 --	3148 --	3193 --	3209 --	3510 --	3523 --	3536 --	3557 --	3592 --	6018 --	7002 --	7064 --	7501 --	9008 --	9022 --	9506 --	9518 --
1500 --	2007 --	2045 --	2212 --	2507 --	2521 --	3021 --	3035 --	3046 --	3057 --	3135 --	3150 --	3194 --	3210 --	3511 --	3524 --	3537 --	3560 --	3595 --	6020 --	7003 --	7065 --	7502 --	9009 --	9104 --	9507 --	9519 --
1M00 --	2009 --	2046 --	2214 --	2508 --	3000 --	3022 --	3036 --	3047 --	3058 --	3136 --	3151 --	3195 --	3211 --	3513 --	3526 --	3538 --	3561 --	5200 --	6021 --	7004 --	7066 --	7510 --	9010 --	9200 --	9508 --	9520 --
1M59 --	2010 --	2200 --	2215 --	2509 --	3001 --	3023 --	3037 --	3048 --	3059 --	3137 --	3152 --	3196 --	3212 --	3515 --	3527 --	3539 --	3568 --	5201 --	6022 --	7005 --	7067 --	7516 --	9011 --	9220 --	9509 --	9540 --
1M83 --	2012 --	2202 --	2216 --	2510 --	3002 --	3024 --	3038 --	3049 --	3060 --	3138 --	3153 --	3200 --	3213 --	3516 --	3528 --	3540 --	3573 --	5202 --	6023 --	7006 --	7072 --	9001 --	9013 --	9221 --	9510 --	9541 --
1M84 --	2013 --	2203 --	2219 --	2511 --	3003 --	3025 --	3039 --	3050 --	3061 --	3140 --	3160 --	3201 --	3215 --	3517 --	3529 --	3541 --	3585 --	5500 --	6024 --	7007 --	7073 --	9002 --	9016 --	9222 --	9511 --	9542 --
1M90 --	2019 --	2204 --	2500 --	2512 --	3004 --	3026 --	3040 --	3051 --	3129 --	3141 --	3161 --	3202 --	3501 --	3518 --	3530 --	3543 --	3586 --	6000 --	6025 --	7008 --	7074 --	9003 --	9017 --	9500 --	9512 --	9543 --
2001 --	2022 --	2205 --	2501 --	2516 --	3005 --	3030 --	3041 --	3052 --	3130 --	3142 --	3163 --	3203 --	3502 --	3519 --	3531 --	3544 --	3588 --	6004 --	6026 --	7010 --	7075 --	9004 --	9018 --	9501 --	9513 --	9544 --
2002 --	2023 --	2206 --	2502 --	2517 --	3006 --	3031 --	3042 --	3053 --	3131 --	3143 --	3164 --	3206 --	3503 --	3520 --	3532 --	3549 --	3589 --	6006 --	6200 --	7011 --	7200 --	9005 --	9019 --	9502 --	9514 --	9545 --
2003 --	2036 --	2208 --	2504 --	2518 --	3007 --	3032 --	3043 --	3054 --	3132 --	3144 --	3191 --	3207 --	3506 --	3521 --	3533 --	3551 --	3590 --	6008 --	6500 --	7061 --	7250 --	9006 --	9020 --	9503 --	9515 --	9550 --
2004 --	2038 --	2209 --	2505 --	2519 --	3008 --	3033 --	3044 --	3055 --	3133 --	3145 --	3192 --	3208 --	3507 --	3522 --	3535 --	3553 --	3591 --	6016 --	7001 --	7062 --	7500 --	9007 --	9021 --	9505 --	9516 --	



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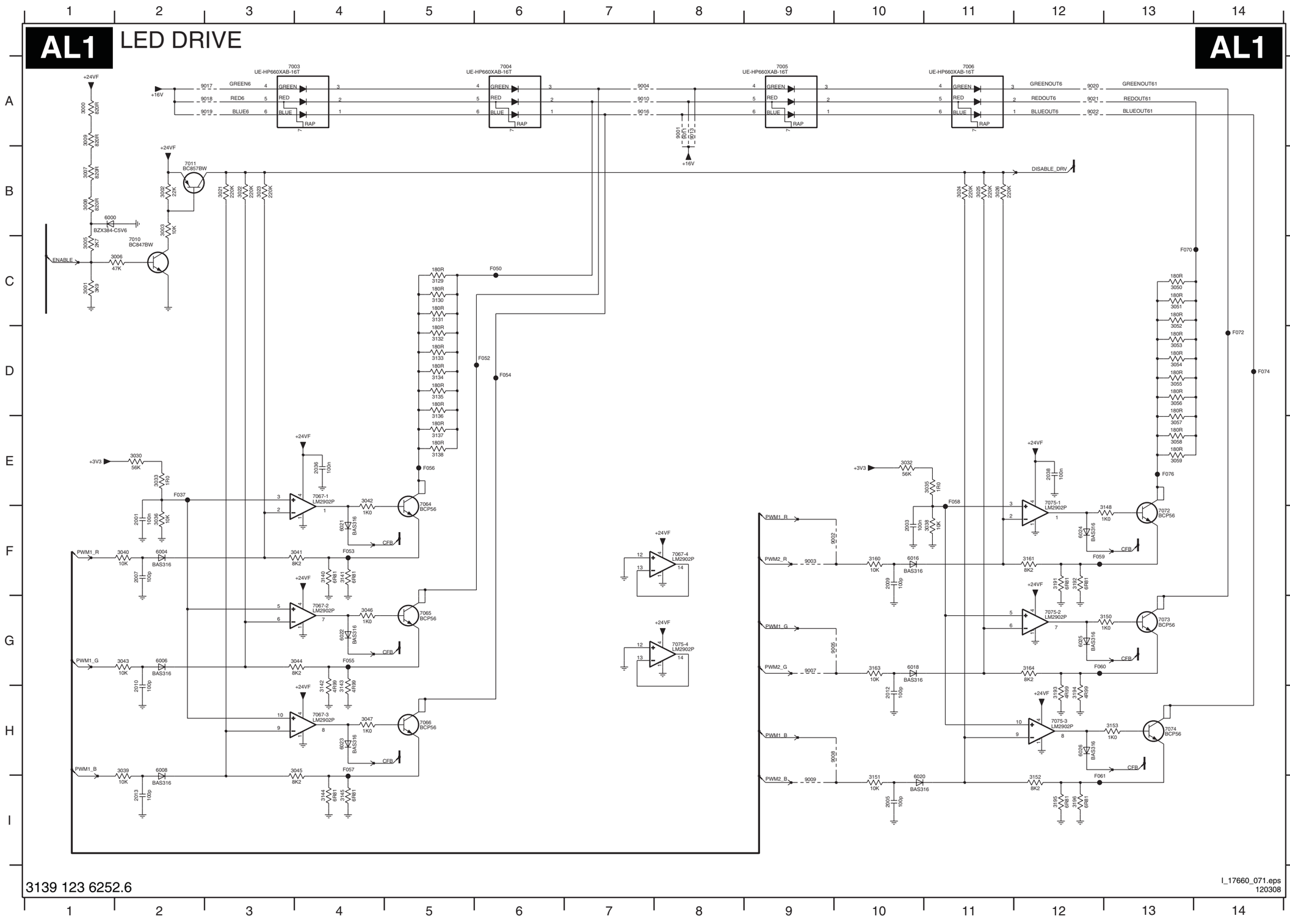
8 LED Back UPEC Panel: LED Drive



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2001 F2
2003 F10
2005 I10
2007 F2
2009 F10
2010 H2
2012 H10
2013 I2
2036 E4
2038 E12
3000 A1
3001 C1
3002 B2
3003 B2
3005 C1
3006 C2
3007 B1
3008 B1
3009 A1
3021 B3
3022 B3
3023 B3
3024 B11
3025 B11
3026 B11
3030 E2
3032 E10
3033 E2
3035 E11
3036 F2
3038 F11
3039 H2
3040 F2
3041 F4
3042 E4
3043 G2
3044 G4
3045 H4
3046 G4
3047 H4
3050 C13
3051 C13
3052 C13
3053 D13
3054 D13
3055 D13
3056 D13
3057 E13
3058 E13
3059 E13
3129 C5
3130 C5
3131 C5
3132 D5
3133 D5
3134 D5
3135 D5
3136 D5
3137 E5
3138 E5
3140 F4
3141 F4
3142 H4
3143 H4
3144 I4
3145 I4
3148 F13
3150 G13
3151 I10
3152 I12
3153 H13
3160 F10
3161 F12
3163 G10
3164 G12
3191 F12
3192 F12
3193 H12
3194 H12
3195 I12
3196 I12
6000 B1
6004 F2
6006 G2
6008 H2
6016 F10
6018 G10
6020 I10
6021 F4
6022 G4
6023 H4
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6025 G12
6026 H12
7003 A4
7004 A6
7005 A9
7006 A11
7010 C2
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3030 E2 F059 F12
3032 E10 F060 G12
3033 E2 F061 I12
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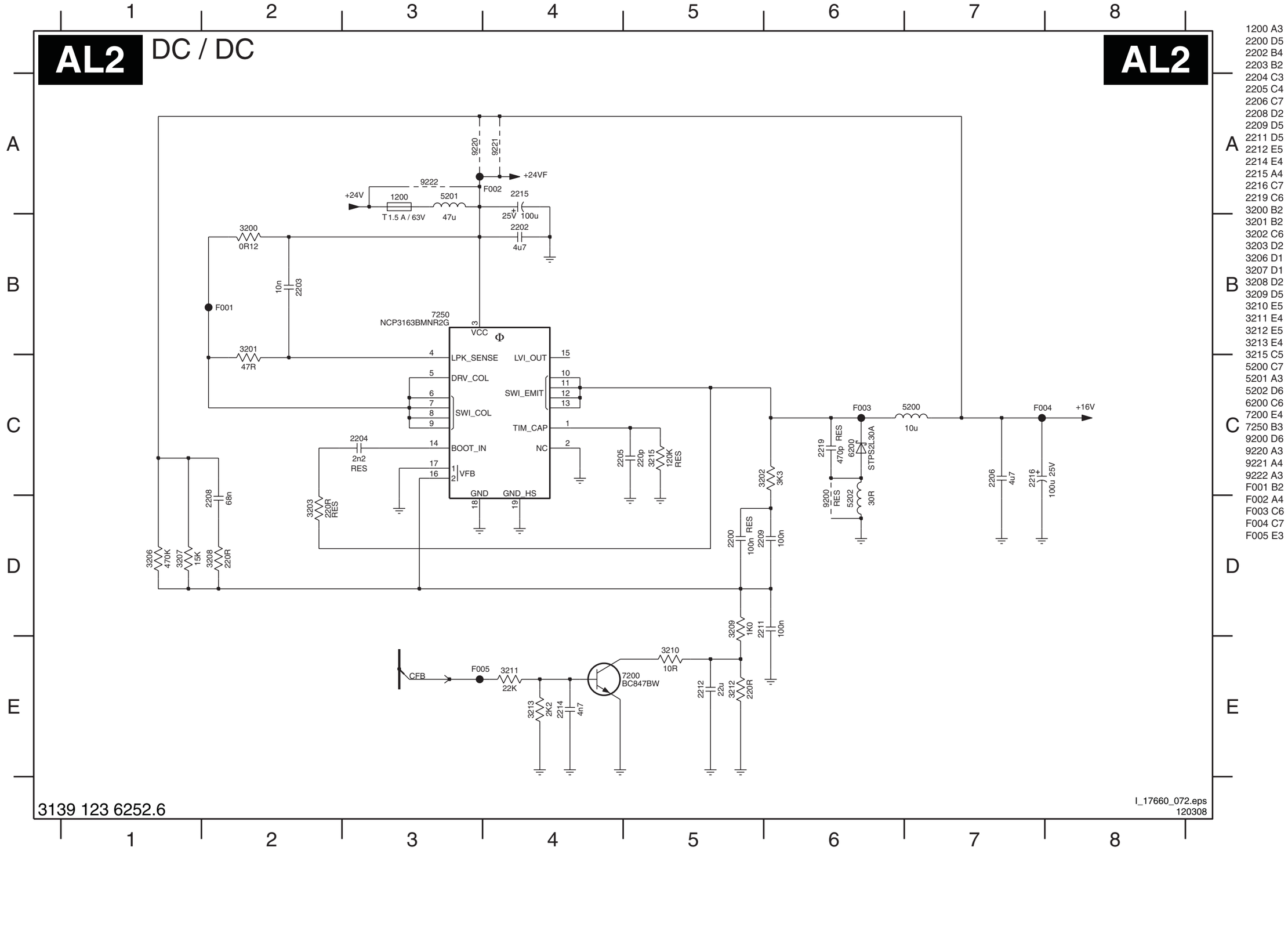
3039 H2 F076 E13

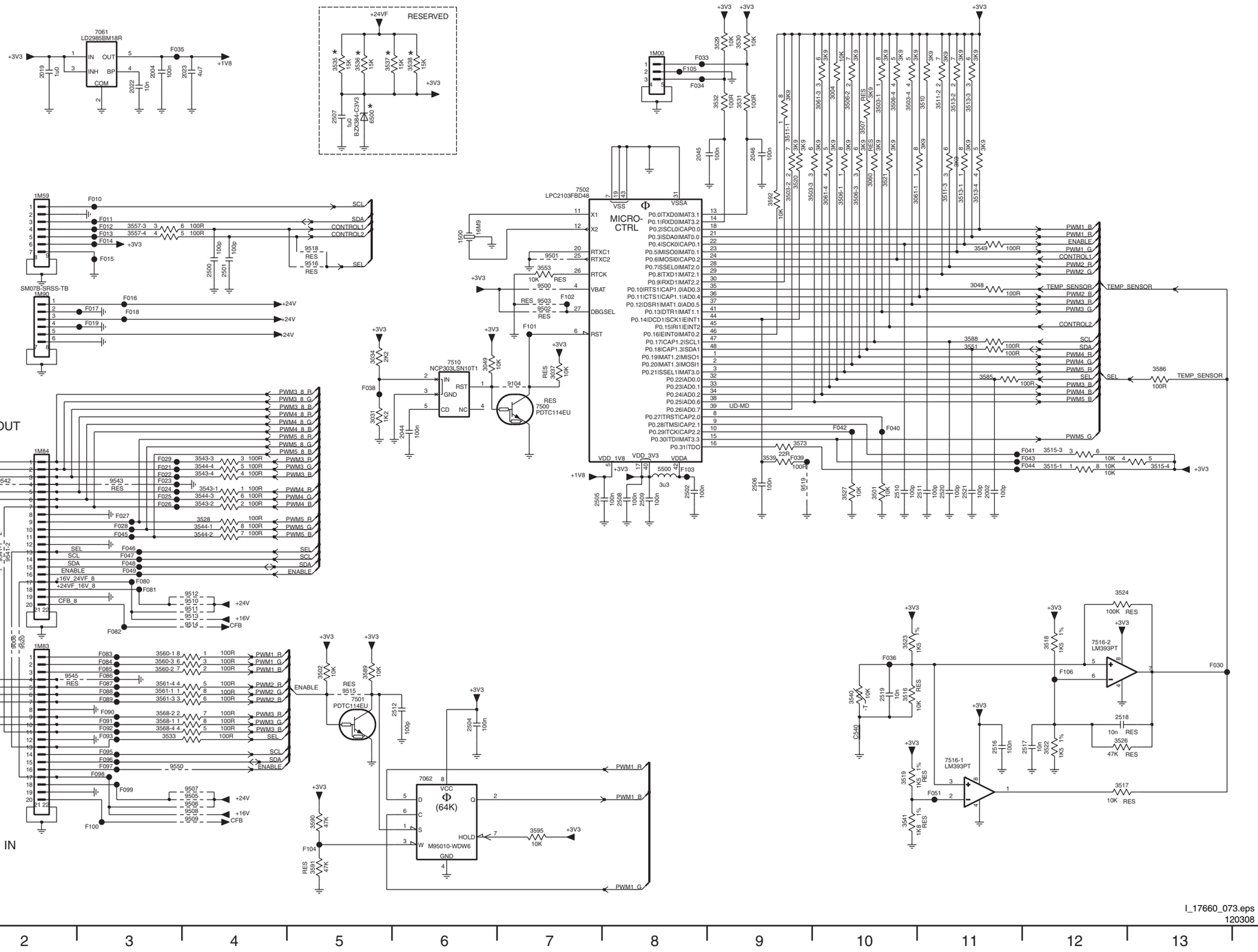
8 LED Back UPEC Panel: DC / DC



8 LED Back UPEC Panel: uC Block

AL3 MICROCONTROLLER BLOCK

AL3



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1M59	C2	3591	I5
1M83	G2	3592	C9
1M84	E2	3595	I7
1M90	D2	5500	E8
2002	F11	6500	B5
2004	B3	7061	A3
2019	B2	7062	H6
2022	B3	7500	E7
2023	B4	7501	H5
2044	E6	7502	C7
2045	B8	7510	D6
2046	B9	7516-1	H11
2500	D4	7516-2	G12
2501	D4	9006	G2
2502	F8	9104	E7
2504	H6	9500	D7
2505	F7	9501	C7
2506	F9	9502	D7
2507	B5	9503	D7
2508	F8	9505	I4
2509	F8	9506	I4
2510	F10	9507	H4
2511	F11	9508	I4
2512	H6	9509	I4
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2517	H12	9511	G4
2518	H12	9512	G4
2519	H10	9513	G4
2520	F11	9514	G4
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3031	E5	9518	C5
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3503-2	C9	9543	F3
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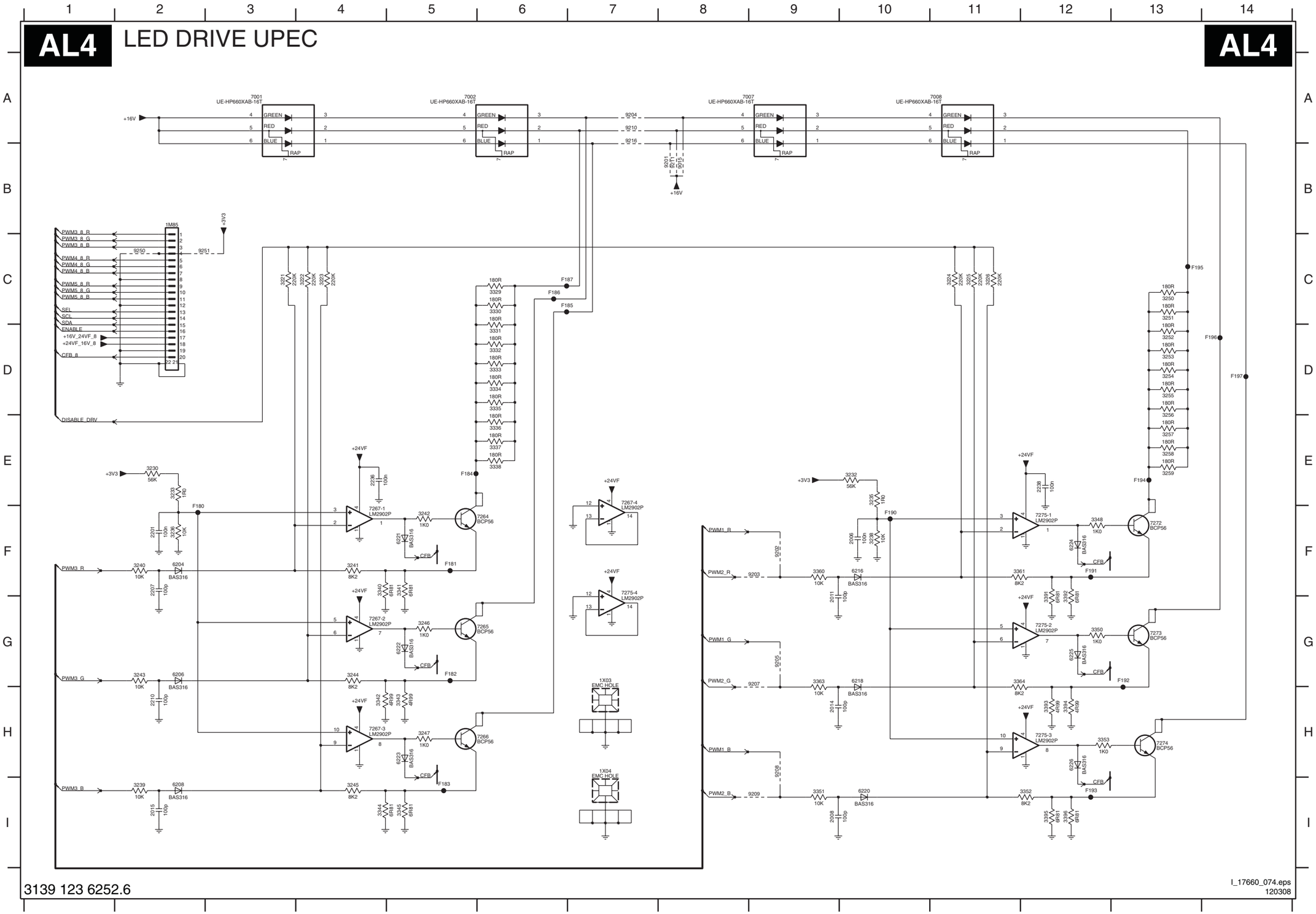
3507	B10	F012	C3
3510	B11	F013	C3
3511-1	B9	F014	C3
3511-2	B11	F015	C3
3511-3	C11	F016	D3
3513-1	C11	F017	D3
3513-2	B11	F018	D3
3513-3	B11	F019	D3
3513-4	C11	F021	E3
3515-1	E12	F022	F3
3515-3	E12	F023	F3
3515-4	E13	F024	F3
3516	H10	F025	F3
3517	H12	F026	F3
3518	G12	F027	F3
3519	H10	F028	F3
3520	C9	F029	E3
3521	C10	F030	G13
3522	H12	F033	B8
3523	G10	F034	B8
3524	G12	F035	A3
3526	H12	F036	G10
3527	F10	F038	E5
3528	F4	F039	E9
3529	A9	F040	E10
3530	A9	F041	E12
3531	B9	F042	E10
3532	B9	F043	E12
3533	H3	F044	E12
3535	B5	F045	F3
3536	B5	F046	F3
3537	B5	F047	F3
3538	B6	F048	F3
3539	E9	F049	F3
3540	H10	F051	H11
3541	I10	F080	G3
3543-1	F4	F081	G3
3543-2	F4	F082	G3
3543-3	E4	F083	G3
3543-4	E4	F084	G3
3544-1	F4	F085	G3
3544-2	F4	F086	G3
3544-3	F4	F087	G3
3544-4	E4	F088	H3
3549	C11	F089	H3
3551	D11	F090	H3
3553	D7	F091	H3
3557-3	C3	F092	H3
3557-4	C3	F093	H3
3560-1	G3	F095	H3
3560-2	G3	F096	H3
3560-3	G3	F097	H3
3561-1	H3	F098	H3
3561-3	H3	F099	I3
3561-4	G3	F100	I3
3568-1	H3	F101	D7
3568-2	H3	F102	D7
3568-4	H3	F103	E8
3573	E9	F104	I5
3585	E11	F105	B8
3586	D13	F106	G12
3588	D11		

8 LED Back UPEC Panel: LED Drive



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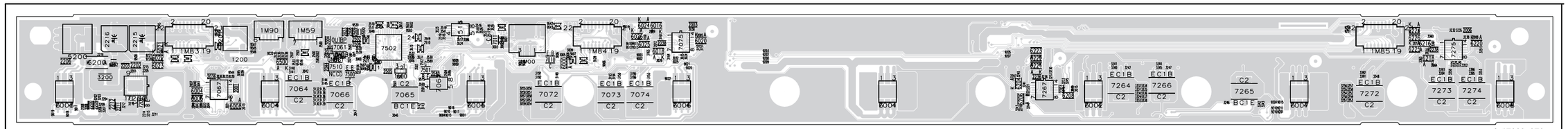
1M85 B2
1X03 G7
1X04 H7
2006 F10
2008 I9
2011 G9
2014 H9
2015 I2
2201 F2
2207 F2
2210 H2
2236 E4
2238 E12
3221 C3
3222 C4
3223 C4
3224 C11
3225 C11
3226 C11
3230 E2
3232 E10
3233 E2
3235 E10
3236 F2
3238 F10
3239 I2
3240 F2
3241 F4
3242 F5
3243 G2
3244 G4
3245 I4
3246 G5
3247 H5
3250 C13
3251 C13
3252 D13
3253 D13
3254 D13
3255 D13
3256 D13
3257 E13
3258 E13
3259 E13
3329 C6
3330 C6
3331 D6
3332 D6
3333 D6
3334 D6
3335 D6
3336 E6
3337 E6
3338 E6
3340 F4
3341 F5
3342 H4
3343 H5
3344 I4
3345 I5
3348 F12
3350 G12
3351 I9
3352 I12
3353 H12
3360 F9
3361 F11
3363 G9
3364 G11
3391 G12
3392 G12
3393 H12
3394 H12
3395 I12
3396 I12
6204 F2
6206 G2
6208 I2
6216 F10
6218 G10
6220 I10
6221 F5
6222 G5
6223 H5
6224 F12
6225 G12
6226 H12
7001 A3
7002 A5
7007 A9
7008 A11
7264 F6
7265 G6
7266 H6
7267-1 F4
7267-2 G4
7267-3 H4
7267-4 E7
7272 F13
7273 G13
7274 H13
7275-1 F12
7275-2 G12
7275-3 H12
7275-4 F7
9015 B8
9201 B8
9202 F9
9203 F9
9204 A7
9205 G9
9207 G9
9208 H9
9209 I9
9210 A7
9211 B8
9216 A7
9250 C2
9251 C2
F180 F2
F181 F5
F182 G5
F183 I5
F184 E5
F185 C6
F186 C6
F187 C6
F190 E10
F191 F12
F192 G13
F193 I12
F194 E13
F195 C13
F196 D14
F197 D14

Layout 8 LED Back UPEC Panel (Top Side)

1200 ---	2008 ---	2046 ---	2215 ---	2511 ---	3007 ---	3036 ---	3051 ---	3133 ---	3152 ---	3203 ---	3226 ---	3247 ---	3333 ---	3352 ---	3506 ---	3526 ---	3543 ---	3591 ---	6022 ---	6224 ---	7062 ---	7272 ---	9007 ---	9200 ---	9250 ---	9514 ---
1500 ---	2009 ---	2200 ---	2216 ---	2512 ---	3008 ---	3037 ---	3052 ---	3134 ---	3153 ---	3206 ---	3230 ---	3250 ---	3334 ---	3353 ---	3507 ---	3527 ---	3544 ---	3592 ---	6023 ---	6225 ---	7064 ---	7273 ---	9008 ---	9201 ---	9251 ---	9515 ---
1M00 ---	2010 ---	2201 ---	2219 ---	2516 ---	3009 ---	3038 ---	3053 ---	3135 ---	3160 ---	3207 ---	3232 ---	3251 ---	3335 ---	3360 ---	3510 ---	3528 ---	3549 ---	3595 ---	6024 ---	6226 ---	7065 ---	7274 ---	9009 ---	9202 ---	9500 ---	9516 ---
1M59 ---	2011 ---	2202 ---	2236 ---	2517 ---	3021 ---	3039 ---	3054 ---	3136 ---	3161 ---	3208 ---	3233 ---	3252 ---	3336 ---	3361 ---	3511 ---	3529 ---	3551 ---	5200 ---	6025 ---	6500 ---	7066 ---	7275 ---	9010 ---	9203 ---	9501 ---	9518 ---
1M83 ---	2012 ---	2203 ---	2238 ---	2518 ---	3022 ---	3040 ---	3055 ---	3137 ---	3163 ---	3209 ---	3235 ---	3253 ---	3337 ---	3363 ---	3513 ---	3530 ---	3553 ---	5201 ---	6026 ---	7001 ---	7067 ---	7500 ---	9011 ---	9204 ---	9502 ---	9519 ---
1M84 ---	2013 ---	2204 ---	2500 ---	2519 ---	3023 ---	3041 ---	3056 ---	3138 ---	3164 ---	3210 ---	3236 ---	3254 ---	3338 ---	3364 ---	3515 ---	3531 ---	3557 ---	5202 ---	6200 ---	7002 ---	7072 ---	7501 ---	9013 ---	9205 ---	9503 ---	9520 ---
1M85 ---	2014 ---	2205 ---	2501 ---	2520 ---	3024 ---	3042 ---	3057 ---	3140 ---	3191 ---	3211 ---	3238 ---	3255 ---	3340 ---	3391 ---	3516 ---	3532 ---	3560 ---	5500 ---	6204 ---	7003 ---	7073 ---	7502 ---	9015 ---	9207 ---	9505 ---	9540 ---
1M90 ---	2015 ---	2206 ---	2502 ---	2521 ---	3025 ---	3043 ---	3058 ---	3141 ---	3192 ---	3212 ---	3239 ---	3256 ---	3341 ---	3392 ---	3517 ---	3533 ---	3561 ---	6000 ---	6206 ---	7004 ---	7074 ---	7510 ---	9016 ---	9208 ---	9506 ---	9541 ---
2001 ---	2019 ---	2207 ---	2504 ---	3000 ---	3026 ---	3044 ---	3059 ---	3142 ---	3193 ---	3213 ---	3240 ---	3257 ---	3342 ---	3393 ---	3518 ---	3535 ---	3568 ---	6004 ---	6208 ---	7005 ---	7075 ---	7516 ---	9017 ---	9209 ---	9507 ---	9542 ---
2002 ---	2022 ---	2208 ---	2505 ---	3001 ---	3030 ---	3045 ---	3060 ---	3143 ---	3194 ---	3215 ---	3241 ---	3258 ---	3343 ---	3394 ---	3519 ---	3536 ---	3573 ---	6006 ---	6216 ---	7006 ---	7200 ---	9001 ---	9018 ---	9210 ---	9508 ---	9543 ---
2003 ---	2023 ---	2209 ---	2506 ---	3002 ---	3031 ---	3046 ---	3061 ---	3144 ---	3195 ---	3221 ---	3242 ---	3259 ---	3344 ---	3395 ---	3520 ---	3537 ---	3585 ---	6008 ---	6218 ---	7007 ---	7250 ---	9002 ---	9019 ---	9211 ---	9509 ---	9544 ---
2004 ---	2036 ---	2210 ---	2507 ---	3003 ---	3032 ---	3047 ---	3129 ---	3145 ---	3196 ---	3222 ---	3243 ---	3329 ---	3345 ---	3396 ---	3521 ---	3538 ---	3586 ---	6016 ---	6220 ---	7008 ---	7264 ---	9003 ---	9020 ---	9216 ---	9510 ---	9545 ---
2005 ---	2038 ---	2211 ---	2508 ---	3004 ---	3033 ---	3048 ---	3130 ---	3148 ---	3200 ---	3223 ---	3244 ---	3330 ---	3348 ---	3501 ---	3522 ---	3539 ---	3588 ---	6018 ---	6221 ---	7010 ---	7265 ---	9004 ---	9021 ---	9220 ---	9511 ---	9550 ---
2006 ---	2044 ---	2212 ---	2509 ---	3005 ---	3034 ---	3049 ---	3131 ---	3150 ---	3201 ---	3224 ---	3245 ---	3331 ---	3350 ---	3502 ---	3523 ---	3540 ---	3589 ---	6020 ---	6222 ---	7011 ---	7266 ---	9005 ---	9022 ---	9221 ---	9512 ---	
2007 ---	2045 ---	2214 ---	2510 ---	3006 ---	3035 ---	3050 ---	3132 ---	3151 ---	3202 ---	3225 ---	3246 ---	3332 ---	3351 ---	3503 ---	3524 ---	3541 ---	3590 ---	6021 ---	6223 ---	7061 ---	7267 ---	9006 ---	9104 ---	9222 ---	9513 ---	



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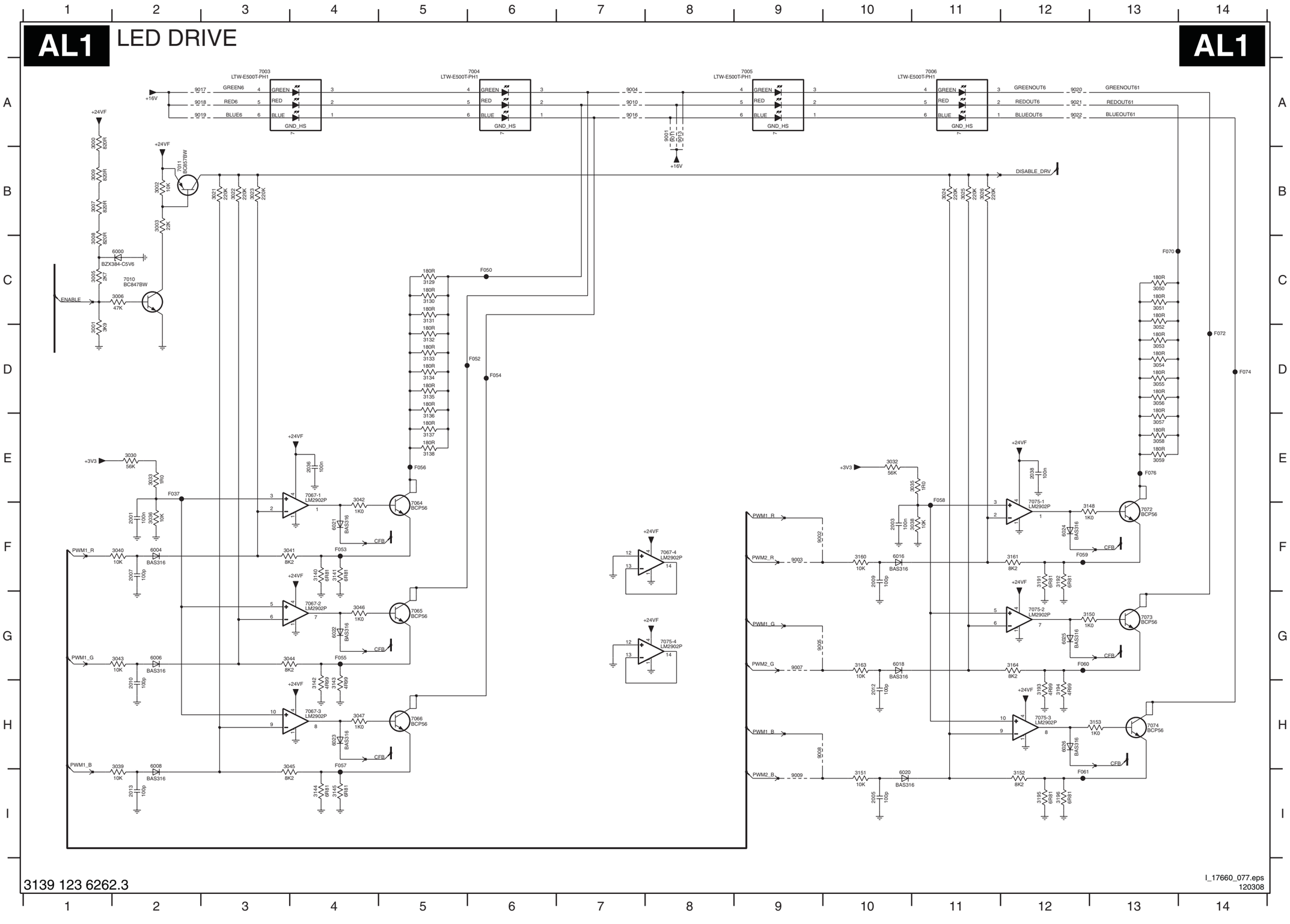
4 LED Lite-On Panel: LED Drive

AL1 LED DRIVE **AL1**



3139 123 6262.3

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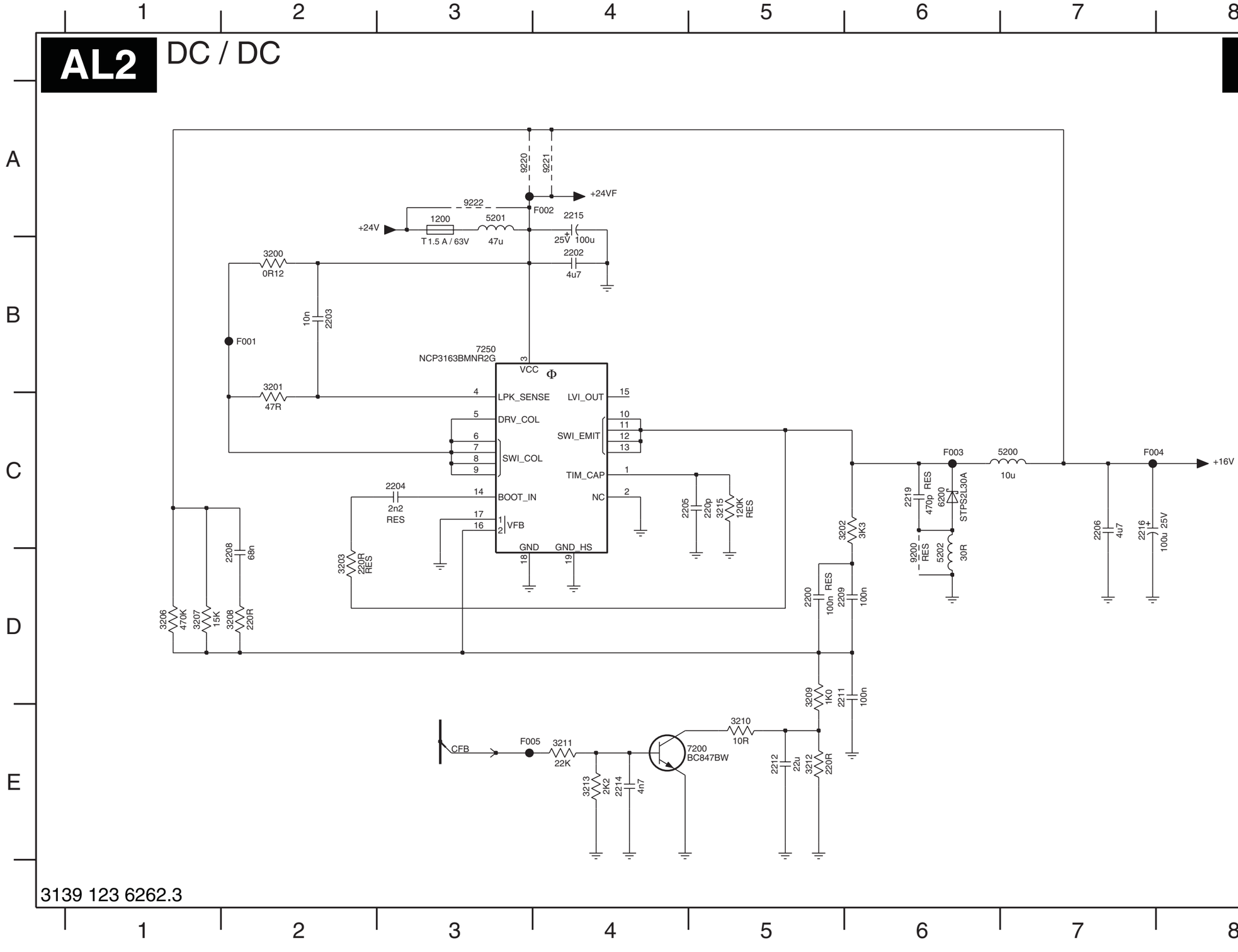
4 LED Lite-On Panel: DC / DC

AL2 DC / DC AL2



1200 A3
2200 D5
2202 B4
2203 B2
2204 C3
2205 C4
2206 C7
2208 D2
2209 D5
2211 D5
2212 E5
2214 E4
2215 A4
2216 C7
2219 C6
3200 B2
3201 B2
3202 C6
3203 D2
3206 D1
3207 D1
3208 D2
3209 D5
3210 E5
3211 E4
3212 E5
3213 E4
3215 C5
5200 C7
5201 A3
5202 D6
6200 C6
7200 E4
7250 B3
9200 D6
9220 A3
9221 A4
9222 A3
F001 B2
F002 A4
F003 C6
F004 C7
F005 E3

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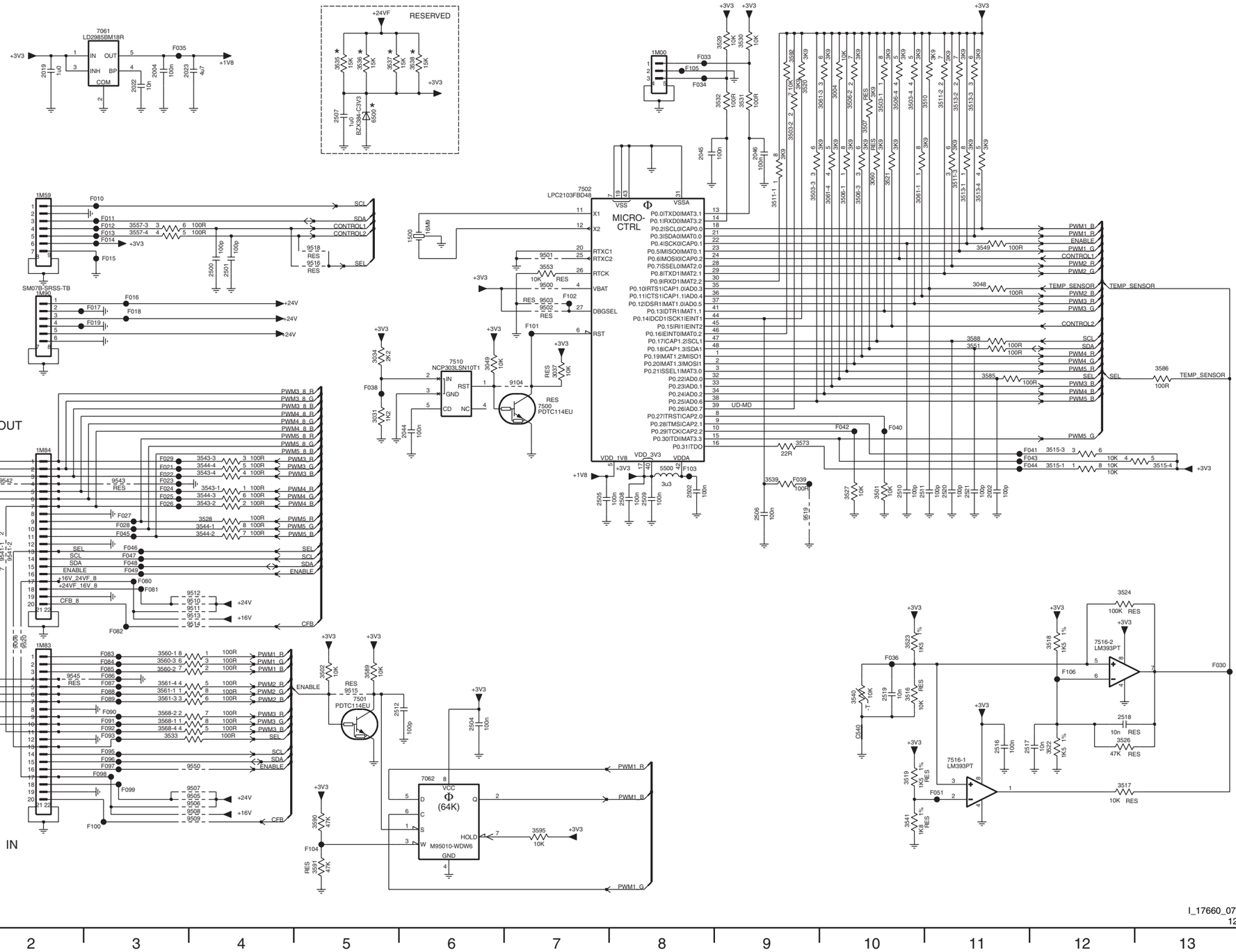
4 LED Lite-On Panel: uC Block

AL3 MICROCONTROLLER BLOCK

AL3

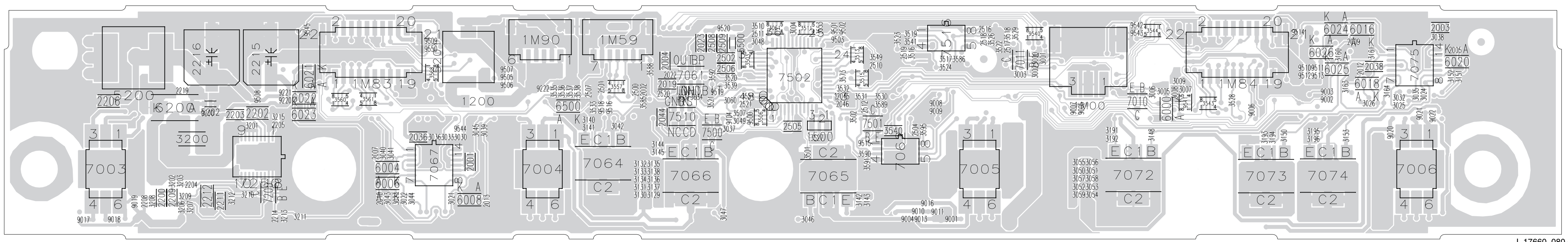


3104 313 6262.3

1500 C6	3589 G5
1M00 A8	3590 I5
1M59 C2	3591 I5
1M83 G2	3592 A9
1M84 E2	3595 I7
1M90 D2	5500 E8
2002 F11	6500 B5
2004 B3	7061 A3
2019 B2	7062 H6
2022 B3	7500 E7
2023 B3	7501 H5
2044 E6	7502 C7
2045 B8	7510 D6
2046 B9	7516-1 H11
2500 D4	7516-2 G12
2501 D4	9006 G2
2502 F8	9104 E7
2504 H6	9500 D7
2505 F7	9501 C7
2506 F9	9502 D7
2507 B5	9503 D7
2508 F8	9505 I4
2509 F8	9506 I4
2510 F10	9507 H4
2511 F10	9508 I4
2512 H5	9509 I4
2516 H11	9510 G4
2517 H11	9511 G4
2518 H12	9512 G4
2519 H10	9513 G4
2520 F11	9514 G4
2521 F11	9515 H5
3004 B10	9516 C5
3031 E5	9518 C5
3034 D5	9519 F9
3037 D7	9520 G2
3048 D11	9540-1 F2
3049 D6	9540-2 F2
3060 C10	9540-3 F1
3061-1 C10	9540-4 F1
3061-3 B10	9541-1 F2
3061-4 C10	9541-2 F2
3501 F10	9541-3 F1
3502 G5	9541-4 F1
3503-1 B10	9542 F2
3503-2 B9	9543 F3
3503-3 C9	9544 G1
3503-4 B10	9545 G2
3506-1 C10	9550 H4
3506-2 B10	C540 H10
3506-3 C10	F010 C3
3506-4 B10	F011 C3
3507 B10	F012 C3
3510 B11	F013 C3
3511-1 C9	F014 C3
3511-2 B11	F015 C3
3511-3 C11	F016 D3
3513-1 C11	F017 D3
3513-2 B11	F018 D3
3513-3 B11	F019 D3
3513-4 C11	F021 E3
3515-1 E12	F022 E3
3515-3 E12	F023 F3
3515-4 E13	F024 F3
3516 H10	F025 F3
3517 H12	F026 F3
3518 G12	F027 F3
3519 H10	F028 F3
3520 B9	F029 E3
3521 C10	F030 G13
3522 H12	F033 B8
3523 G10	F034 B8
3524 G12	F035 A9
3526 H12	F036 G10
3527 F10	F038 E5
3528 F4	F039 F9
3529 A9	F040 E10
3530 A9	F041 E12
3531 B9	F042 E10
3532 B9	F043 E12
3533 H3	F044 E12
3535 B5	F045 F3
3536 B5	F046 F3
3537 B5	F047 F3
3538 B6	F048 F3
3539 F9	F049 F3
3540 H10	F051 H11
3541 I10	F080 F3
3543-1 F4	F081 G3
3543-2 F4	F082 G3
3543-3 E4	F083 G3
3543-4 E4	F084 G3
3544-1 F4	F085 G3
3544-2 F4	F086 G3
3544-3 F4	F087 G3
3544-4 E4	F088 H3
3549 C11	F089 H3
3551 D11	F090 H3
3553 D7	F091 H3
3557-3 C3	F092 H3
3557-4 C3	F093 H3
3560-1 G3	F095 H3
3560-2 G3	F096 H3
3560-3 G3	F097 H3
3561-1 H3	F098 H3
3561-3 H3	F099 H3
3561-4 G3	F100 I3
3568-1 H3	F101 D7
3568-2 H3	F102 D7
3568-4 H3	F103 E8
3573 E9	F104 I5
3585 E11	F105 B8
3586 D13	F106 G12
3588 D11	

Layout 4 LED Lite-On Panel: (Top Side)

1200 --	2005 --	2044 --	2211 --	2506 --	2520 --	3009 --	3034 --	3045 --	3056 --	3134 --	3148 --	3193 --	3209 --	3510 --	3523 --	3536 --	3557 --	3592 --	6018 --	7004 --	7072 --	9001 --	9013 --	9221 --	9510 --	9541 --
1500 --	2007 --	2045 --	2212 --	2507 --	2521 --	3021 --	3035 --	3046 --	3057 --	3135 --	3150 --	3194 --	3210 --	3511 --	3524 --	3537 --	3560 --	3595 --	6020 --	7005 --	7073 --	9002 --	9016 --	9222 --	9511 --	9542 --
1M00 --	2009 --	2046 --	2214 --	2508 --	3000 --	3022 --	3036 --	3047 --	3058 --	3136 --	3151 --	3195 --	3211 --	3513 --	3526 --	3538 --	3561 --	5200 --	6021 --	7006 --	7074 --	9003 --	9017 --	9500 --	9512 --	9543 --
1M59 --	2010 --	2200 --	2215 --	2509 --	3001 --	3023 --	3037 --	3048 --	3059 --	3137 --	3152 --	3196 --	3212 --	3515 --	3527 --	3539 --	3568 --	5201 --	6022 --	7010 --	7075 --	9004 --	9018 --	9501 --	9513 --	9544 --
1M83 --	2012 --	2202 --	2216 --	2510 --	3002 --	3024 --	3038 --	3049 --	3060 --	3138 --	3153 --	3200 --	3213 --	3516 --	3528 --	3540 --	3573 --	5202 --	6023 --	7011 --	7200 --	9005 --	9019 --	9502 --	9514 --	9545 --
1M84 --	2013 --	2203 --	2219 --	2511 --	3003 --	3025 --	3039 --	3050 --	3061 --	3140 --	3160 --	3201 --	3215 --	3517 --	3529 --	3541 --	3585 --	5500 --	6024 --	7061 --	7250 --	9006 --	9020 --	9503 --	9515 --	9550 --
1M90 --	2019 --	2204 --	2500 --	2512 --	3004 --	3026 --	3040 --	3051 --	3129 --	3141 --	3161 --	3202 --	3501 --	3518 --	3530 --	3543 --	3586 --	6000 --	6025 --	7062 --	7500 --	9007 --	9021 --	9505 --	9516 --	
2001 --	2022 --	2205 --	2501 --	2516 --	3005 --	3030 --	3041 --	3052 --	3130 --	3142 --	3163 --	3203 --	3502 --	3519 --	3531 --	3544 --	3588 --	6004 --	6026 --	7064 --	7501 --	9008 --	9022 --	9506 --	9518 --	
2002 --	2023 --	2206 --	2502 --	2517 --	3006 --	3031 --	3042 --	3053 --	3131 --	3143 --	3164 --	3206 --	3503 --	3520 --	3532 --	3549 --	3589 --	6006 --	6200 --	7065 --	7502 --	9009 --	9104 --	9507 --	9519 --	
2003 --	2036 --	2208 --	2504 --	2518 --	3007 --	3032 --	3043 --	3054 --	3132 --	3144 --	3191 --	3207 --	3506 --	3521 --	3533 --	3551 --	3590 --	6008 --	6500 --	7066 --	7510 --	9010 --	9200 --	9508 --	9520 --	
2004 --	2038 --	2209 --	2505 --	2519 --	3008 --	3033 --	3044 --	3055 --	3133 --	3145 --	3192 --	3208 --	3507 --	3522 --	3535 --	3553 --	3591 --	6016 --	7003 --	7067 --	7516 --	9011 --	9220 --	9509 --	9540 --	



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4 LED MD OPAMP Lite-on (32")

AL1 AMBILIGHT MD OPAMP LITEON

AL1

7004 LTW-E500T-PH1 · 7003 LTW-E500T-PH1 · 7002 LTW-E500T-PH1 · 7001 LTW-E500T-PH1

+24VF · +3V3 · ENABLE · PWM2_R · PWM1_R · PWM2_G · PWM1_G · PWM2_B · PWM1_B

GREENOUT6 · REDOUT6 · BLUEOUT6 · GREENOUT61 · REDOUT61 · BLUEOUT61

6000 BZX384-C5V6 · 7010 BC847BW · 7011 BC857BW · 7064 BCP56 · 7065 BCP56 · 7066 BCP56

7067-1 LM324 · 7067-2 LM324 · 7067-3 LM324 · 7067-4 LM324

6004 BAS316 · 6006 BAS316 · 6008 BAS316 · 6020 BAS316

F052 · F053 · F054 · F056 · F067 · F068 · F069 · F075 · F076 · C7074 · E7074 · DRV_6L · FB_6L

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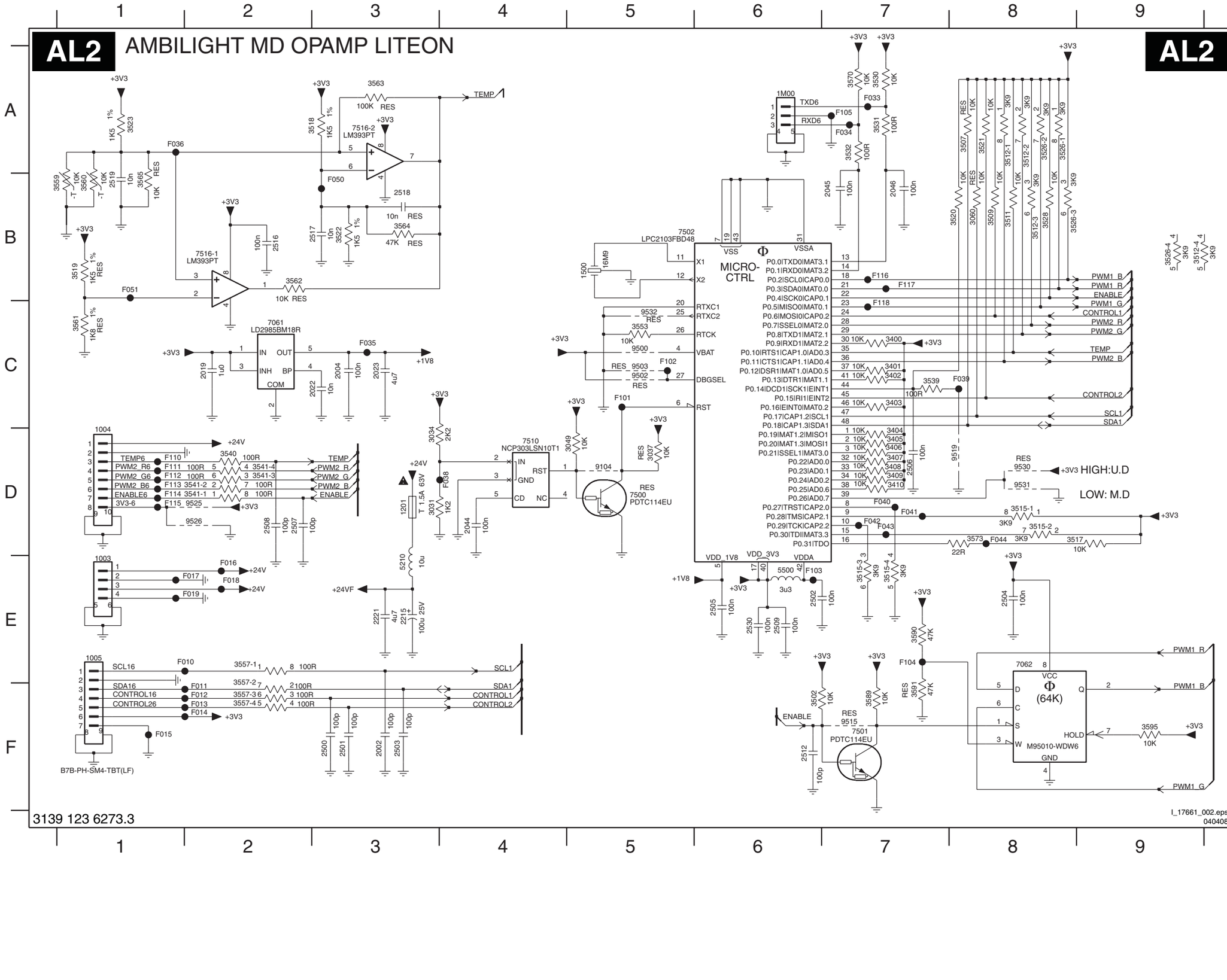
040408

4 LED MD OPAMP Lite-on (32")

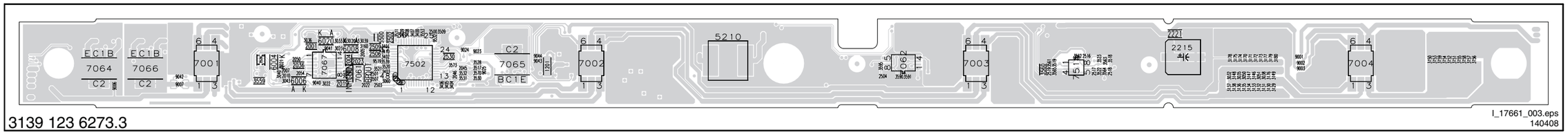
AL2 AMBILIGHT MD OPAMP LITEON



1003 E1	3557-1 E2
1004 D1	3557-2 F2
1005 E1	3557-3 F2
1201 D3	3557-4 F2
1500 B5	3559 B1
1M00 A6	3560 B1
2002 F3	3561 C1
2004 C3	3562 B2
2019 C2	3563 A3
2022 C3	3564 B3
2023 C3	3565 B1
2044 D4	3570 A7
2045 B7	3573 D8
2046 B7	3589 F7
2215 E3	3590 E7
2221 E3	3591 F7
2500 F3	3595 F9
2501 F3	5210 E3
2502 E6	5500 E6
2503 F3	7061 C2
2504 E8	7062 E8
2505 E6	7500 D5
2506 D7	7501 F7
2507 D2	7502 B6
2508 D2	7510 D4
2509 E6	7516-1 B2
2512 F6	7516-2 A3
2516 B2	9104 D5
2517 B3	9500 C5
2518 B3	9502 C5
2519 B1	9503 C5
2530 E6	9515 F7
3031 D3	9519 D8
3034 D3	9525 D2
3037 D5	9526 D2
3049 D5	9530 D8
3060 B8	9531 D8
3400 C7	9532 C5
3401 C7	F010 E2
3402 C7	F011 F2
3403 C7	F012 F2
3404 D7	F013 F2
3405 D7	F014 F2
3406 D7	F015 F1
3407 D7	F016 E2
3408 D7	F017 E2
3409 D7	F018 E2
3410 D7	F019 E2
3502 F6	F033 A7
3507 A8	F034 A7
3509 B8	F035 C3
3511 B8	F036 A1
3512-1 A8	F038 D4
3512-2 A8	F039 C8
3512-3 B8	F040 D7
3512-4 B9	F041 D7
3515-1 D8	F042 D7
3515-2 D8	F043 D7
3515-3 E7	F044 D8
3515-4 E7	F050 B3
3517 D8	F051 B1
3518 A3	F101 C5
3519 B1	F102 C5
3520 B8	F103 E6
3521 A8	F104 E7
3522 B3	F105 A7
3523 A1	F110 D1
3526-1 A8	F111 D1
3526-2 A8	F112 D1
3526-3 B8	F113 D1
3526-4 B9	F114 D1
3528 B8	F115 D1
3530 A7	F116 B7
3531 A7	F117 B7
3532 A7	F118 C7
3539 C7	
3540 D2	
3541-1 D2	
3541-2 D2	
3541-3 D2	
3541-4 D2	
3553 C5	

Layout 4 LED MD OPAMP Lite-on (32") (Top Side)

1201 -- 2013 -- 2046 -- 2500 -- 2509 -- 3021 -- 3035 -- 3050 -- 3132 -- 3138 -- 3151 -- 3157 -- 3172 -- 3178 -- 3403 -- 3409 -- 3518 -- 3526 -- 3553 -- 3564 -- 3595 -- 6020 -- 7062 -- 7516 -- 9023 -- 9043 --
2001 -- 2019 -- 2050 -- 2501 -- 2516 -- 3022 -- 3036 -- 3051 -- 3133 -- 3146 -- 3152 -- 3158 -- 3173 -- 3179 -- 3404 -- 3410 -- 3519 -- 3528 -- 3559 -- 3565 -- 5210 -- 7001 -- 7064 -- 9001 -- 9024 -- 9044 --
2004 -- 2022 -- 2054 -- 2502 -- 2517 -- 3023 -- 3038 -- 3060 -- 3134 -- 3147 -- 3153 -- 3159 -- 3174 -- 3180 -- 3405 -- 3507 -- 3520 -- 3530 -- 3560 -- 3570 -- 5500 -- 7002 -- 7065 -- 9002 -- 9025 -- 9519 --
2005 -- 2023 -- 2057 -- 2503 -- 2518 -- 3030 -- 3039 -- 3129 -- 3135 -- 3148 -- 3154 -- 3160 -- 3175 -- 3400 -- 3406 -- 3509 -- 3521 -- 3531 -- 3561 -- 3573 -- 6004 -- 7003 -- 7066 -- 9003 -- 9040 -- 9532 --
2007 -- 2036 -- 2215 -- 2504 -- 2519 -- 3032 -- 3040 -- 3130 -- 3136 -- 3149 -- 3155 -- 3170 -- 3176 -- 3401 -- 3407 -- 3511 -- 3522 -- 3532 -- 3562 -- 3590 -- 6006 -- 7004 -- 7067 -- 9006 -- 9041 --
2010 -- 2045 -- 2221 -- 2506 -- 2530 -- 3033 -- 3043 -- 3131 -- 3137 -- 3150 -- 3156 -- 3171 -- 3177 -- 3402 -- 3408 -- 3517 -- 3523 -- 3539 -- 3563 -- 3591 -- 6008 -- 7061 -- 7502 -- 9007 -- 9042 --



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Layout 4 LED MD OPAMP Lite-on (32") (Top Side)

1003 -- 1500 -- 2044 -- 2508 -- 3001 -- 3005 -- 3008 -- 3031 -- 3041 -- 3045 -- 3049 -- 3142 -- 3145 -- 3515 -- 3557 -- 7010 -- 7501 -- 9104 -- 9503 -- 9526 --
1004 -- 1M00 -- 2505 -- 2512 -- 3002 -- 3006 -- 3009 -- 3034 -- 3042 -- 3046 -- 3140 -- 3143 -- 3502 -- 3540 -- 3589 -- 7011 -- 7510 -- 9500 -- 9515 -- 9530 --
1005 -- 2002 -- 2507 -- 3000 -- 3003 -- 3007 -- 3024 -- 3037 -- 3044 -- 3047 -- 3141 -- 3144 -- 3512 -- 3541 -- 6000 -- 7500 -- 9005 -- 9502 -- 9525 -- 9531 --

3139 123 6273.3

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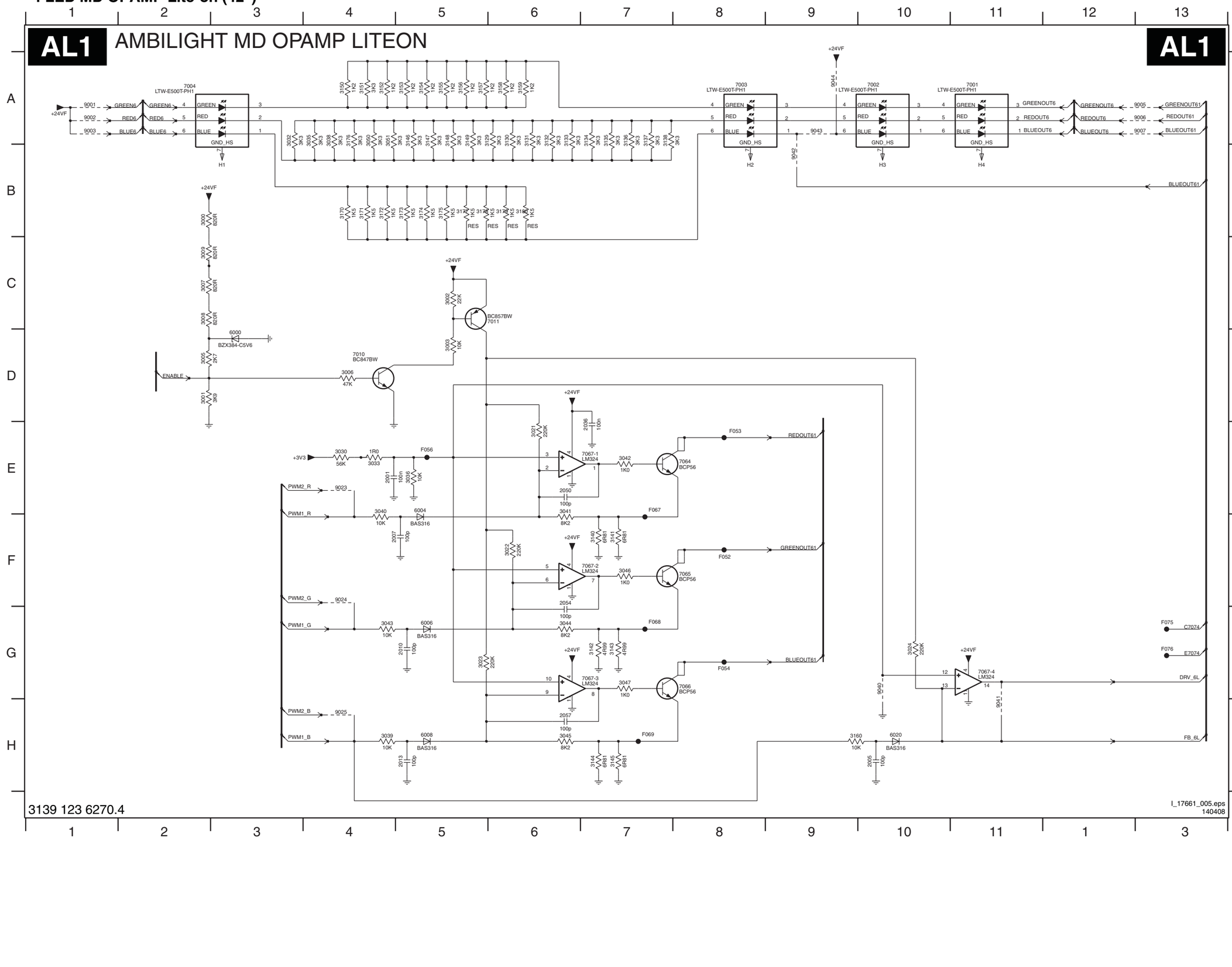
4 LED MD OPAMP Lite-on (42")

AL1 AMBILIGHT MD OPAMP LITEON

AL1



3139 123 6270.4

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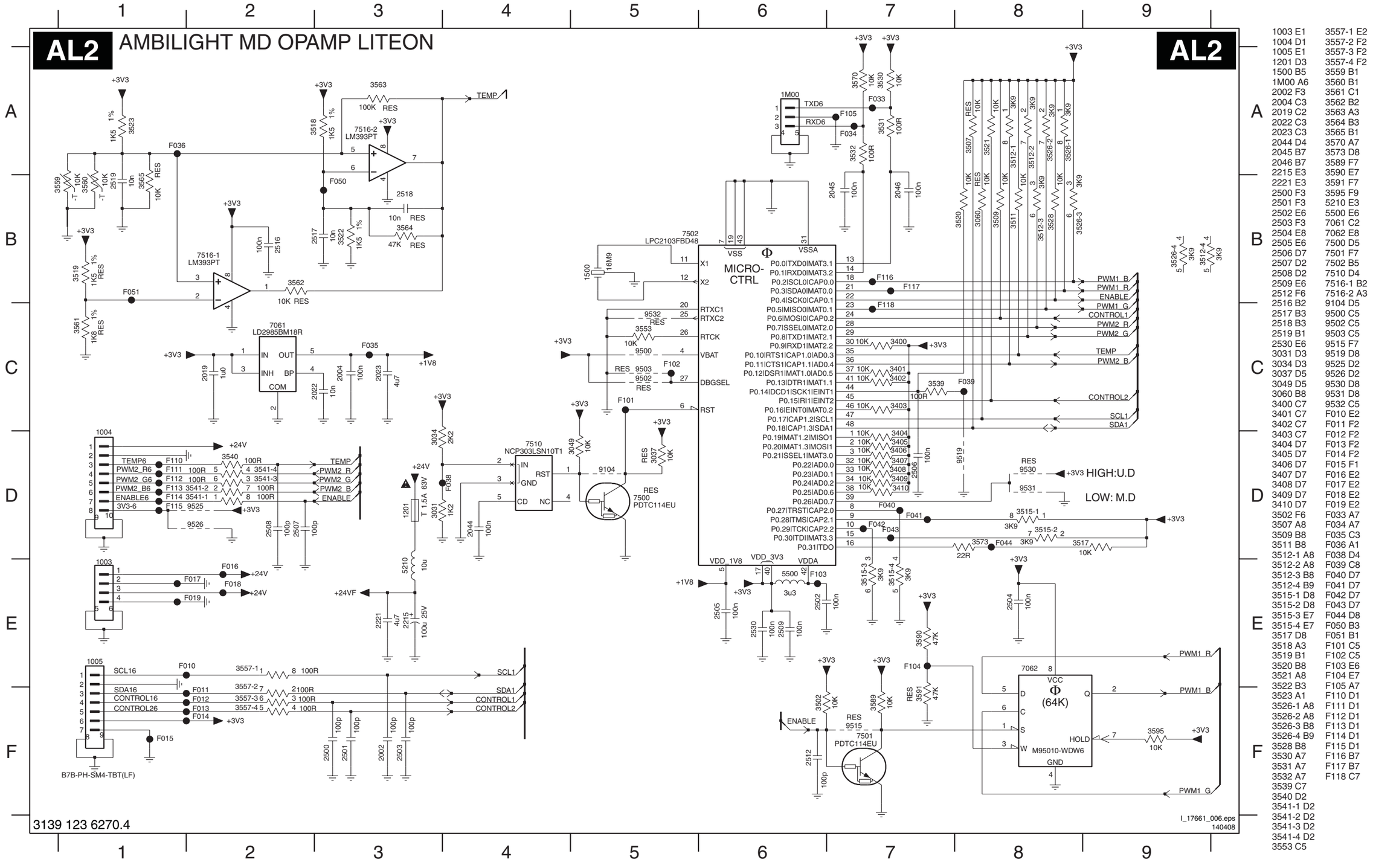
2001 E4
2005 H10
2007 F5
2010 G5
2013 H5
2036 E7
2050 E6
2054 F6
2057 H6
3000 B2
3001 D2
3002 C5
3003 D5
3005 D2
3006 D4
3007 C2
3008 C2
3009 C2
3021 E6
3022 F6
3023 G5
3024 G10
3030 E4
3032 A3
3033 E4
3035 A4
3036 E5
3038 A4
3039 H4
3040 E4
3041 E6
3042 E7
3043 G4
3044 G6
3045 H6
3046 F7
3047 G7
3050 A4
3051 A4
3129 A6
3130 A6
3131 A6
3132 A6
3133 A6
3134 A7
3135 A7
3136 A7
3137 A7
3138 A7
3140 F7
3141 F7
3142 G7
3143 G7
3144 H7
3145 H7
3146 A5
3147 A5
3148 A5
3149 A5
3150 A4
3151 A4
3152 A4
3153 A5
3154 A5
3155 A5
3156 A5
3157 A5
3158 A6
3159 A6
3160 H9
3170 B4
3171 B4
3172 B4
3173 B5
3174 B5
3175 B5
3176 A4
3177 B5
3178 B5
3179 B6
3180 B6
6000 D3
6004 E5
6006 G5
6008 H5
6020 H10
7001 A11
7002 A10
7003 A8
7004 A2
7010 D4
7011 C5
7064 E8
7065 F8
7066 G8
7067-1 E7
7067-2 F7
7067-3 G7
7067-4 G11
9001 A1
9002 A1
9003 A1
9005 A13
9006 A13
9007 A13
9023 E4
9024 F4
9025 H4
9040 G10
9041 H11
9042 B9
9043 A9
9044 A9
9045 F8
F053 E8
F054 G8
F056 E5
F067 E7
F068 G7
F069 H7
F075 G13
F076 G13

4 LED MD OPAMP Lite-on (42")

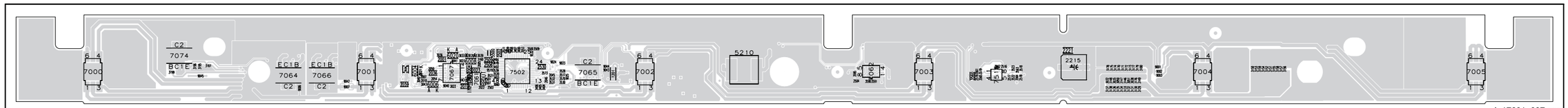
AL2 AMBILIGHT MD OPAMP LITEON



1003 E1	3557-1 E2
1004 D1	3557-2 F2
1005 E1	3557-3 F2
1201 D3	3557-4 F2
1500 B5	3559 B1
1M00 A6	3560 B1
2002 F3	3561 C1
2004 C3	3562 B2
2019 C2	3563 A3
2022 C3	3564 B3
2023 C3	3565 B1
2044 D4	3570 A7
2045 B7	3573 D8
2046 B7	3589 F7
2215 E3	3590 E7
2221 E3	3591 F7
2500 F3	3595 F9
2501 F3	5210 E3
2502 E6	5500 E6
2503 F3	7061 C2
2504 E8	7062 E8
2505 E6	7500 D5
2506 D7	7501 F7
2507 D2	7502 B5
2508 D2	7510 D4
2509 E6	7516-1 B2
2512 F6	7516-2 A3
2516 B2	9104 D5
2517 B3	9500 C5
2518 B3	9502 C5
2519 B1	9503 C5
2530 E6	9515 F7
3031 D3	9519 D8
3034 D3	9525 D2
3037 D5	9526 D2
3049 D5	9530 D8
3060 B8	9531 D8
3400 C7	9532 C5
3401 C7	F010 E2
3402 C7	F011 F2
3403 C7	F012 F2
3404 D7	F013 F2
3405 D7	F014 F2
3406 D7	F015 F1
3407 D7	F016 E2
3408 D7	F017 E2
3409 D7	F018 E2
3410 D7	F019 E2
3502 F6	F033 A7
3507 A8	F034 A7
3509 B8	F035 C3
3511 B8	F036 A1
3512-1 A8	F038 D4
3512-2 A8	F039 C8
3512-3 B8	F040 D7
3512-4 B9	F041 D7
3515-1 D8	F042 D7
3515-2 D8	F043 D7
3515-3 E7	F044 D8
3515-4 E7	F050 B3
3517 D8	F051 B1
3518 A3	F101 C5
3519 B1	F102 C5
3520 B8	F103 E6
3521 A8	F104 E7
3522 B3	F105 A7
3523 A1	F110 D1
3526-1 A8	F111 D1
3526-2 A8	F112 D1
3526-3 B8	F113 D1
3526-4 B9	F114 D1
3528 B8	F115 D1
3530 A7	F116 B7
3531 A7	F117 B7
3532 A7	F118 C7
3539 C7	
3540 D2	
3541-1 D2	
3541-2 D2	
3541-3 D2	
3541-4 D2	
3553 C5	

Layout 4 LED MD OPAMP Lite-on (42") (Top Side)

1201 --- 2013 --- 2046 --- 2500 --- 2509 --- 3021 --- 3035 --- 3050 --- 3132 --- 3138 --- 3151 --- 3157 --- 3171 --- 3177 --- 3199 --- 3405 --- 3507 --- 3520 --- 3530 --- 3560 --- 3570 --- 5500 --- 7001 --- 7062 --- 7502 --- 9007 --- 9042 ---
2001 --- 2019 --- 2050 --- 2501 --- 2516 --- 3022 --- 3036 --- 3051 --- 3133 --- 3146 --- 3152 --- 3158 --- 3172 --- 3178 --- 3400 --- 3406 --- 3509 --- 3521 --- 3531 --- 3561 --- 3573 --- 6004 --- 7002 --- 7064 --- 7516 --- 9023 --- 9043 ---
2004 --- 2022 --- 2054 --- 2502 --- 2517 --- 3023 --- 3038 --- 3060 --- 3134 --- 3147 --- 3153 --- 3159 --- 3173 --- 3179 --- 3401 --- 3407 --- 3511 --- 3522 --- 3532 --- 3562 --- 3590 --- 6006 --- 7003 --- 7065 --- 9001 --- 9024 --- 9044 ---
2005 --- 2023 --- 2057 --- 2503 --- 2518 --- 3030 --- 3039 --- 3129 --- 3135 --- 3148 --- 3154 --- 3160 --- 3174 --- 3180 --- 3402 --- 3408 --- 3517 --- 3523 --- 3539 --- 3563 --- 3591 --- 6008 --- 7004 --- 7066 --- 9002 --- 9025 --- 9045 ---
2007 --- 2036 --- 2215 --- 2504 --- 2519 --- 3032 --- 3040 --- 3130 --- 3136 --- 3149 --- 3155 --- 3161 --- 3175 --- 3195 --- 3403 --- 3409 --- 3518 --- 3526 --- 3553 --- 3564 --- 3595 --- 6020 --- 7005 --- 7067 --- 9003 --- 9040 --- 9519 ---
2010 --- 2045 --- 2221 --- 2506 --- 2530 --- 3033 --- 3043 --- 3131 --- 3137 --- 3150 --- 3156 --- 3170 --- 3176 --- 3196 --- 3404 --- 3410 --- 3519 --- 3528 --- 3559 --- 3565 --- 5210 --- 7000 --- 7061 --- 7074 --- 9006 --- 9041 --- 9532 ---



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Layout 4 LED MD OPAMP Lite-on (42") (Top Side)

1003 --- 1104 --- 1M01 --- 2507 --- 3001 --- 3006 --- 3024 --- 3041 --- 3046 --- 3141 --- 3145 --- 3184 --- 3188 --- 3512 --- 3557 --- 7011 --- 9005 --- 9503 --- 9530 ---
1004 --- 1105 --- 2002 --- 2508 --- 3002 --- 3007 --- 3031 --- 3042 --- 3047 --- 3142 --- 3181 --- 3185 --- 3189 --- 3515 --- 3589 --- 7500 --- 9104 --- 9515 --- 9531 ---
1005 --- 1500 --- 2044 --- 2512 --- 3003 --- 3008 --- 3034 --- 3044 --- 3049 --- 3143 --- 3182 --- 3186 --- 3190 --- 3540 --- 6000 --- 7501 --- 9500 --- 9525 ---
1103 --- 1M00 --- 2505 --- 3000 --- 3005 --- 3009 --- 3037 --- 3045 --- 3140 --- 3144 --- 3183 --- 3187 --- 3502 --- 3541 --- 7010 --- 7510 --- 9502 --- 9526 ---

3139 123 6270.4

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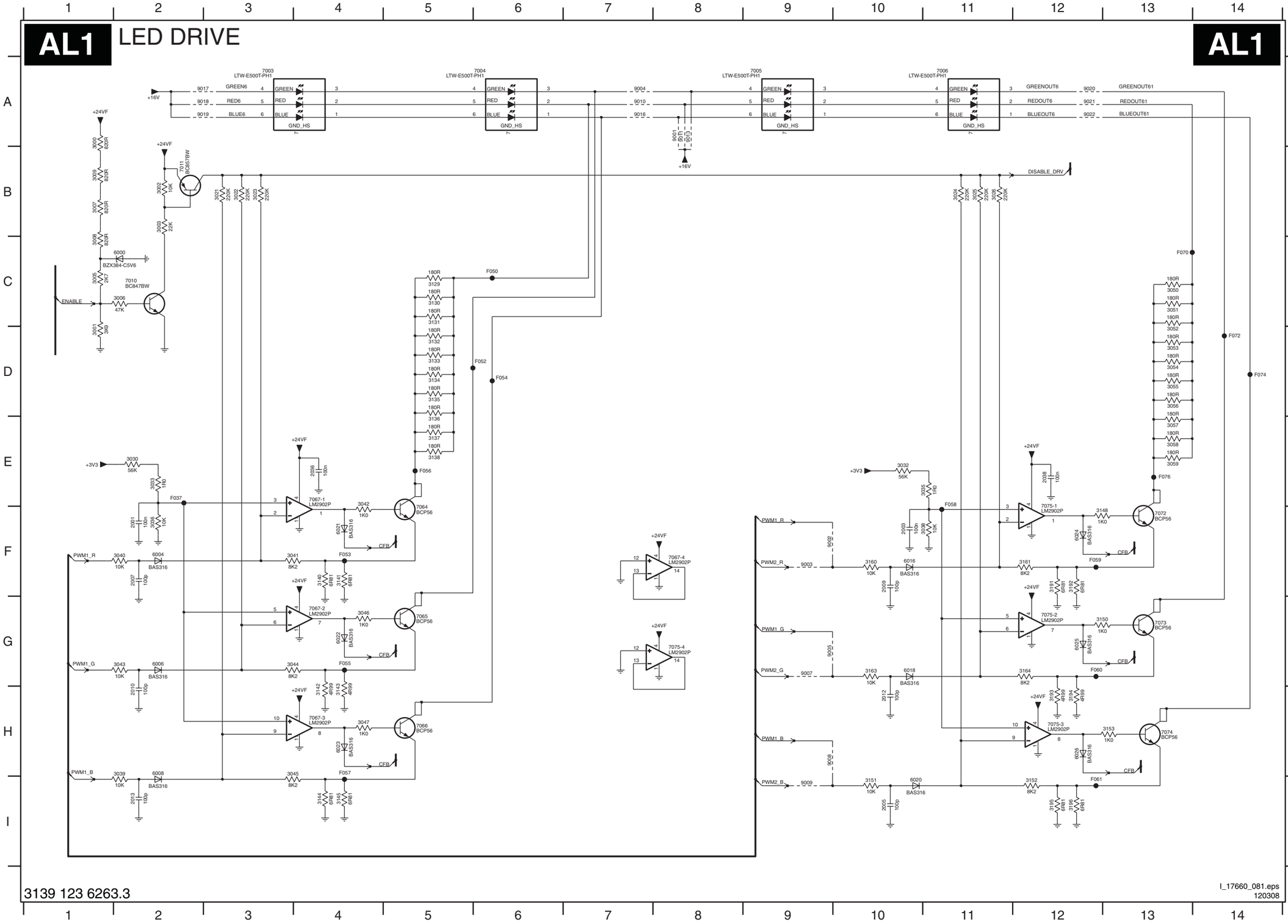
6 LED Lite-On Panel: LED Drive

AL1 LED DRIVE **AL1**



3139 123 6263.3

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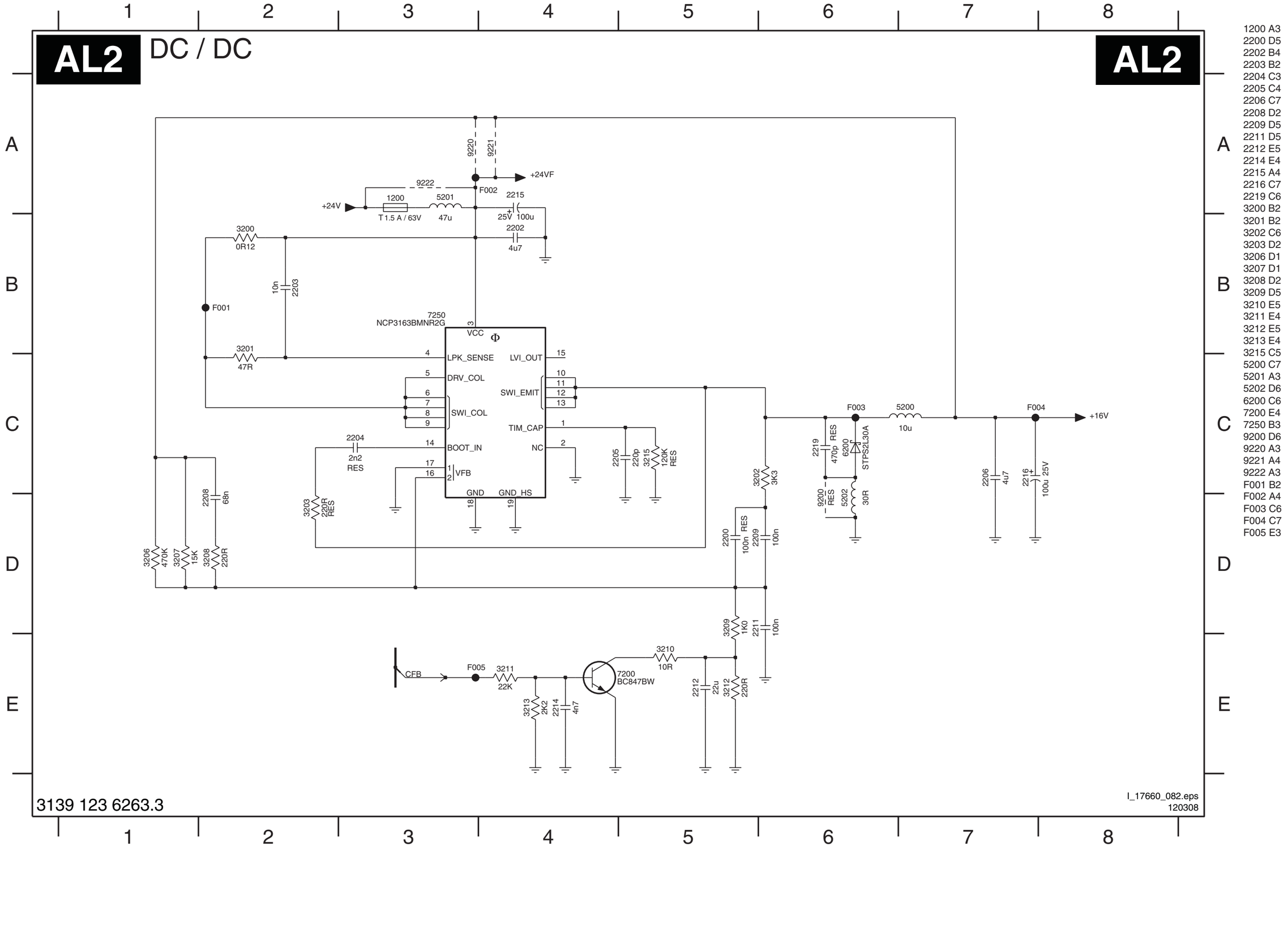
120308

2001 F2
2003 F10
2005 I10
2007 F2
2009 F10
2010 H2
2012 H10
2013 I2
2036 E4
2038 E12
3000 A1
3001 D1
3002 B2
3003 B2
3005 C1
3006 C2
3007 B1
3008 C1
3009 B1
3021 B3
3022 B3
3023 B3
3024 B11
3025 B11
3026 B11
3030 E2
3032 E10
3033 E2
3035 E11
3036 F2
3038 F11
3039 H2
3040 F2
3041 F3
3042 E4
3043 G2
3044 G3
3045 H3
3046 G4
3047 H4
3050 C13
3051 C13
3052 D13
3053 D13
3054 D13
3055 D13
3056 D13
3057 E13
3058 E13
3059 E13
3129 C5
3130 C5
3131 C5
3132 D5
3133 D5
3134 D5
3135 D5
3136 E5
3137 E5
3138 E5
3140 F4
3141 F4
3142 H4
3143 H4
3144 I4
3145 I4
3148 F12
3150 G12
3151 I10
3152 I12
3153 H13
3160 F10
3161 F12
3163 G10
3164 G12
3191 F12
3192 F12
3193 H12
3194 H12
3195 I12
3196 I12
6000 C2
6004 F2
6006 G2
6008 H2
6016 F10
6018 G10
6020 I10
6021 F4
6022 G4
6023 H4
6024 F12
6025 G12
6026 H12
7003 A3
7004 A6
7005 A9
7006 A11
7010 C2
7011 B2
7064 F5
7065 G5
7066 H5
7067-1 E4
7067-2 G4
7067-3 H4
7067-4 F8
7072 F13
7073 G13
7074 H13
7075-1 F12
7075-2 G12
7075-3 H12
7075-4 G8
9001 A8
9002 F9
9003 F9
9004 A7
9005 G9
9007 G9
9008 H9
9009 I9
9010 A7
9011 A8
9013 A8
9016 A7
9017 A2
9018 A2
9019 A2
9020 A12
9021 A12
9022 A12
F037 E2
F050 C6
F052 D6
F053 F4
F054 D6
F055 G4
F056 E5
F057 H4
F058 E11
F059 F12
F060 G12
F061 I12
F070 C13
F072 D14
F074 D14
F076 E13

6 LED Lite-On Panel: DC / DC

AL2 DC / DC



3139 123 6263.3

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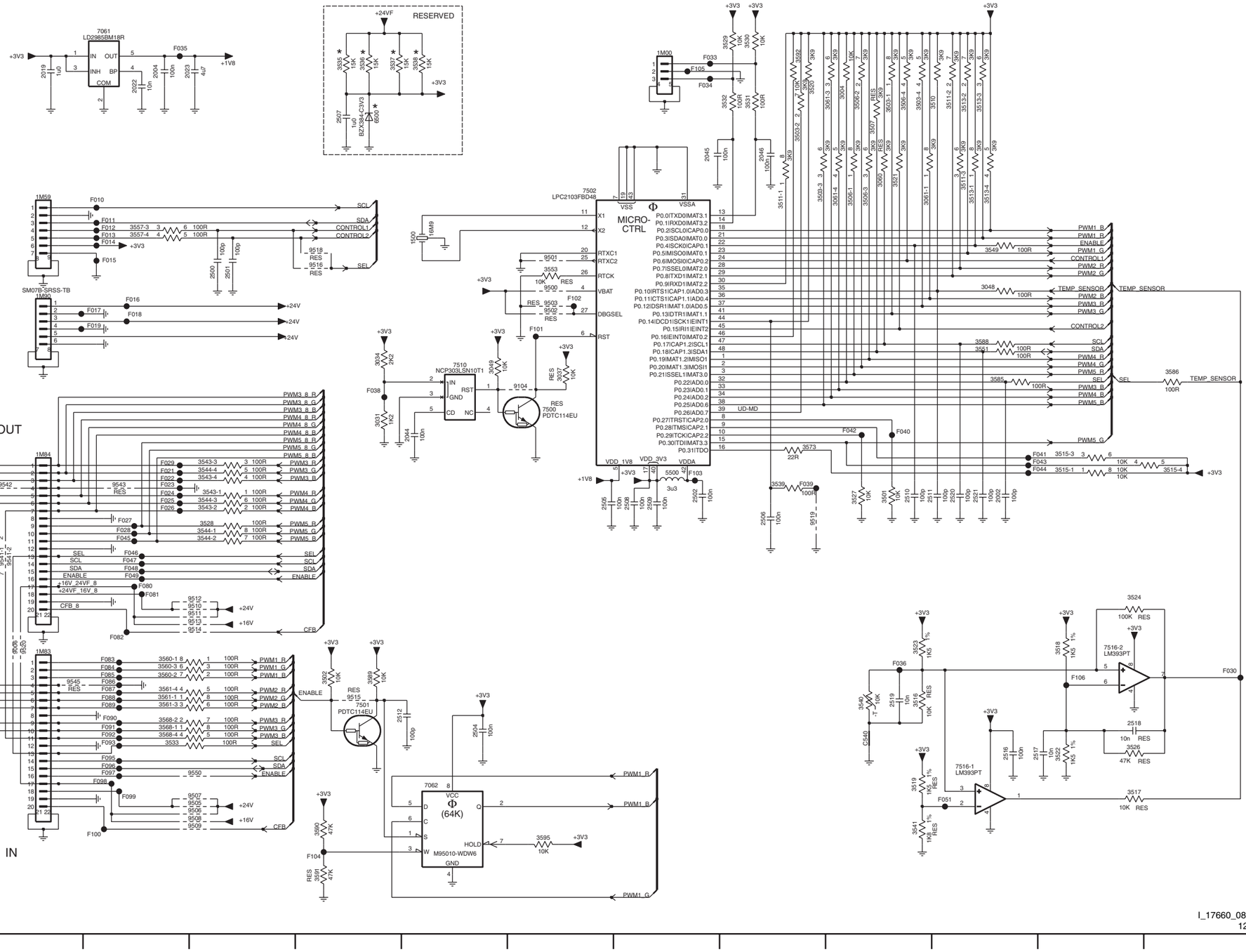
120308

1200 A3
2200 D5
2202 B4
2203 B2
2204 C3
2205 C4
2206 C7
2208 D2
2209 D5
2211 D5
2212 E5
2214 E4
2215 A4
2216 C7
2219 C6
3200 B2
3201 B2
3202 C6
3203 D2
3206 D1
3207 D1
3208 D2
3209 D5
3210 E5
3211 E4
3212 E5
3213 E4
3215 C5
5200 C7
5201 A3
5202 D6
6200 C6
7200 E4
7250 B3
9200 D6
9220 A3
9221 A4
9222 A3
F001 B2
F002 A4
F003 C6
F004 C7
F005 E3

6 LED Lite-On Panel: uC Block

AL3 MICROCONTROLLER BLOCK

AL3



3139 123 6263.3

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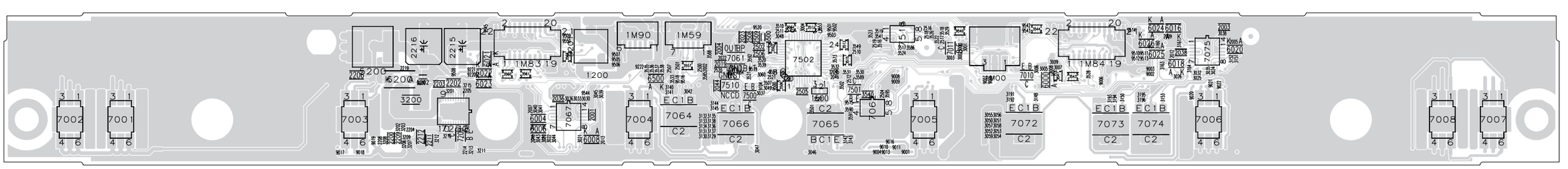
120308

1500 C6	3589 G5
1M00 A8	3590 I5
1M59 C2	3591 I5
1M83 G2	3592 A9
1M84 E2	3593 C9
1M90 D2	3595 I7
2002 F11	5500 E8
2004 B3	6500 B5
2019 B2	7061 A3
2022 B3	7062 H6
2023 B4	7500 E7
2044 E6	7501 H5
2045 B8	7502 C7
2046 B9	7510 D6
2500 D4	7516-1 H11
2501 D4	7516-2 G12
2502 F8	9006 G2
2504 H6	9104 E7
2505 F7	9500 D7
2506 F9	9501 C7
2507 B5	9502 D7
2508 F8	9503 D7
2509 F8	9505 I4
2510 F10	9506 I4
2511 F11	9507 H4
2512 H6	9508 I4
2516 H11	9509 I4
2517 H12	9510 G4
2518 H12	9511 G4
2519 H10	9512 G4
2520 F11	9513 G4
2521 F11	9514 G4
3004 B10	9515 H5
3031 E5	9516 C5
3034 D5	9518 C5
3037 D7	9519 F9
3048 D11	9520 G2
3049 D6	9540-1 F2
3060 C10	9540-2 F2
3061-1 C10	9540-3 F1
3061-3 B10	9540-4 F1
3061-4 C10	9541-1 F2
3501 F10	9541-2 F2
3502 G5	9541-3 F1
3503-1 B10	9541-4 F1
3503-2 B9	9542 F2
3503-3 C9	9543 F3
3503-4 B10	9544 G1
3506-1 C10	9545 G2
3506-2 B10	9550 H4
3506-3 C10	C540 H10
3506-4 B10	F010 C3
3507 B10	F011 C3
3510 B11	F012 C3
3511-1 B11	F013 C3
3511-2 C11	F014 C3
3513-1 C11	F015 C3
3513-2 B11	F016 D3
3513-3 B11	F017 D3
3513-4 C11	F018 D3
3515-1 E12	F019 D3
3515-3 E12	F021 E3
3515-4 E13	F022 E3
3516 H10	F023 F3
3517 H12	F024 F3
3518 G12	F025 F3
3519 H10	F026 F3
3520 B9	F027 F3
3521 C10	F028 F3
3522 H12	F029 E3
3523 G10	F030 G13
3524 G12	F033 B8
3526 H12	F034 B8
3527 F10	F035 A3
3528 F4	F036 G10
3529 A9	F038 E5
3530 A9	F039 F9
3531 B9	F040 E10
3532 B9	F041 E12
3533 H3	F042 E10
3535 B5	F043 E12
3536 B5	F044 E12
3537 B5	F045 F3
3538 B6	F046 F3
3539 F9	F047 F3
3540 H10	F048 F3
3541 I10	F049 F3
3543-1 F4	F051 H11
3543-2 F4	F080 G3
3543-3 E4	F081 G3
3543-4 E4	F082 G3
3544-1 F4	F083 G3
3544-2 F4	F084 G3
3544-3 F4	F085 G3
3544-4 E4	F086 G3
3549 C11	F087 G3
3551 D11	F088 H3
3553 D7	F089 H3
3557-3 C3	F090 H3
3557-4 C3	F091 H3
3560-1 G3	F092 H3
3560-2 G3	F093 H3
3560-3 G3	F095 H3
3561-1 H3	F096 H3
3561-3 H3	F097 H3
3561-4 G3	F098 H3
3568-1 H3	F099 H3
3568-2 H3	F100 I3
3568-4 H3	F101 D7
3573 E9	F102 D7
3585 E11	F103 E8
3586 D13	F104 I5
3588 D11	F105 B8
	F106 G12

Layout 6 LED Lite-On Panel: (Top Side)

1200 -- 2005 -- 2044 -- 2211 -- 2506 -- 2520 -- 3009 -- 3034 -- 3045 -- 3056 -- 3134 -- 3148 -- 3193 -- 3209 -- 3510 -- 3523 -- 3536 -- 3557 -- 3592 -- 6018 -- 7002 -- 7064 -- 7501 -- 9008 -- 9022 -- 9506 -- 9518 --
1500 -- 2007 -- 2045 -- 2212 -- 2507 -- 2521 -- 3021 -- 3035 -- 3046 -- 3057 -- 3135 -- 3150 -- 3194 -- 3210 -- 3511 -- 3524 -- 3537 -- 3560 -- 3595 -- 6020 -- 7003 -- 7065 -- 7502 -- 9009 -- 9104 -- 9507 -- 9519 --
1M00 -- 2009 -- 2046 -- 2214 -- 2508 -- 3000 -- 3022 -- 3036 -- 3047 -- 3058 -- 3136 -- 3151 -- 3195 -- 3211 -- 3513 -- 3526 -- 3538 -- 3561 -- 5200 -- 6021 -- 7004 -- 7066 -- 7510 -- 9010 -- 9200 -- 9508 -- 9520 --
1M59 -- 2010 -- 2200 -- 2215 -- 2509 -- 3001 -- 3023 -- 3037 -- 3048 -- 3059 -- 3137 -- 3152 -- 3196 -- 3212 -- 3515 -- 3527 -- 3539 -- 3568 -- 5201 -- 6022 -- 7005 -- 7067 -- 7516 -- 9011 -- 9220 -- 9509 -- 9540 --
1M83 -- 2012 -- 2202 -- 2216 -- 2510 -- 3002 -- 3024 -- 3038 -- 3049 -- 3060 -- 3138 -- 3153 -- 3200 -- 3213 -- 3516 -- 3528 -- 3540 -- 3573 -- 5202 -- 6023 -- 7006 -- 7072 -- 9001 -- 9013 -- 9221 -- 9510 -- 9541 --
1M84 -- 2013 -- 2203 -- 2219 -- 2511 -- 3003 -- 3025 -- 3039 -- 3050 -- 3061 -- 3140 -- 3160 -- 3201 -- 3215 -- 3517 -- 3529 -- 3541 -- 3585 -- 5500 -- 6024 -- 7007 -- 7073 -- 9002 -- 9016 -- 9222 -- 9511 -- 9542 --
1M90 -- 2019 -- 2204 -- 2500 -- 2512 -- 3004 -- 3026 -- 3040 -- 3051 -- 3129 -- 3141 -- 3161 -- 3202 -- 3501 -- 3518 -- 3530 -- 3543 -- 3586 -- 6000 -- 6025 -- 7008 -- 7074 -- 9003 -- 9017 -- 9500 -- 9512 -- 9543 --
2001 -- 2022 -- 2205 -- 2501 -- 2516 -- 3005 -- 3030 -- 3041 -- 3052 -- 3130 -- 3142 -- 3163 -- 3203 -- 3502 -- 3519 -- 3531 -- 3544 -- 3588 -- 6004 -- 6026 -- 7010 -- 7075 -- 9004 -- 9018 -- 9501 -- 9513 -- 9544 --
2002 -- 2023 -- 2206 -- 2502 -- 2517 -- 3006 -- 3031 -- 3042 -- 3053 -- 3131 -- 3143 -- 3164 -- 3206 -- 3503 -- 3520 -- 3532 -- 3549 -- 3589 -- 6006 -- 6200 -- 7011 -- 7200 -- 9005 -- 9019 -- 9502 -- 9514 -- 9545 --
2003 -- 2036 -- 2208 -- 2504 -- 2518 -- 3007 -- 3032 -- 3043 -- 3054 -- 3132 -- 3144 -- 3191 -- 3207 -- 3506 -- 3521 -- 3533 -- 3551 -- 3590 -- 6008 -- 6500 -- 7061 -- 7250 -- 9006 -- 9020 -- 9503 -- 9515 -- 9550 --
2004 -- 2038 -- 2209 -- 2505 -- 2519 -- 3008 -- 3033 -- 3044 -- 3055 -- 3133 -- 3145 -- 3192 -- 3208 -- 3507 -- 3522 -- 3535 -- 3553 -- 3591 -- 6016 -- 7001 -- 7062 -- 7500 -- 9007 -- 9021 -- 9505 -- 9516 --



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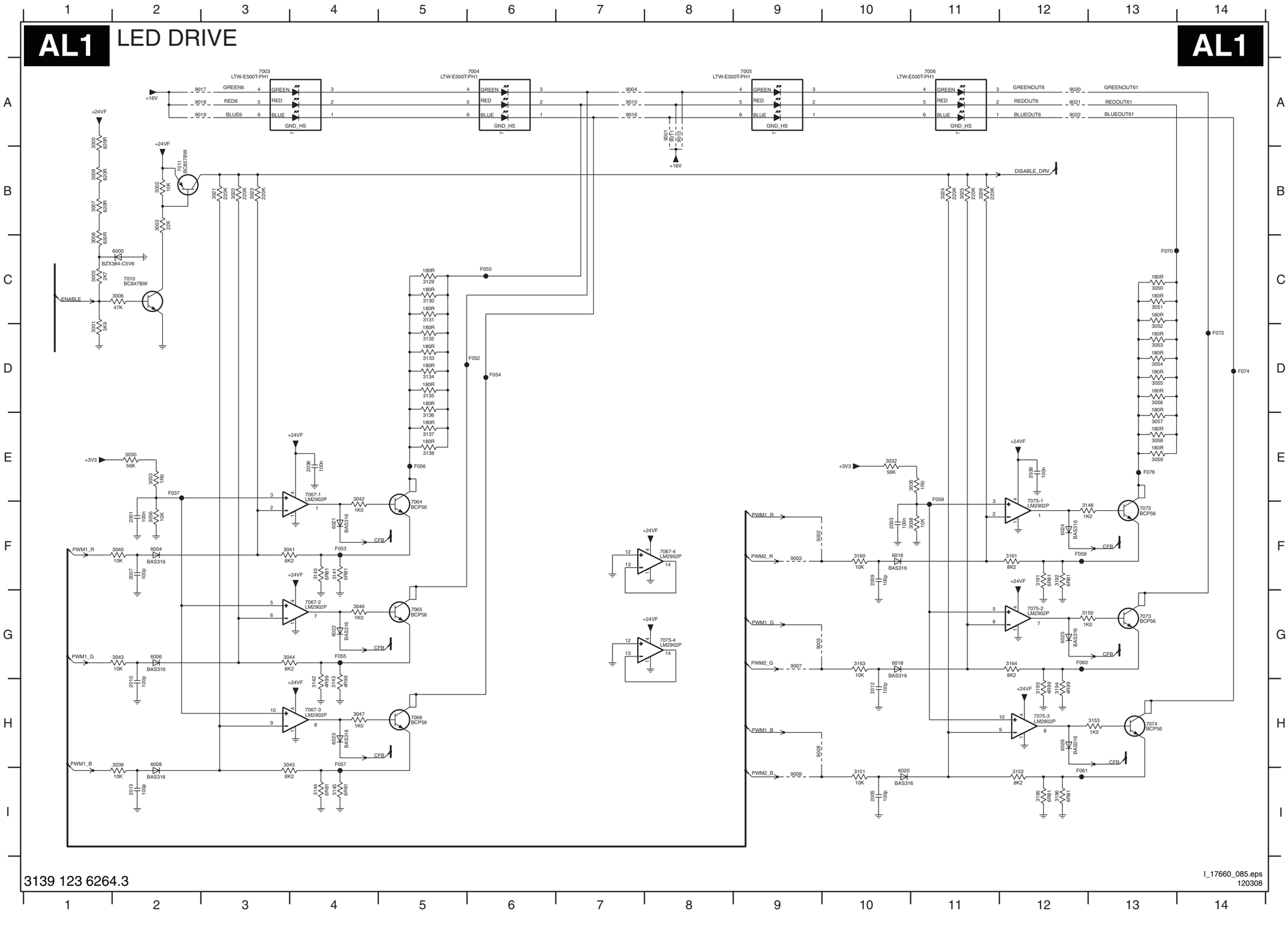
8 LED Lite-On Panel: LED Drive

AL1 LED DRIVE **AL1**



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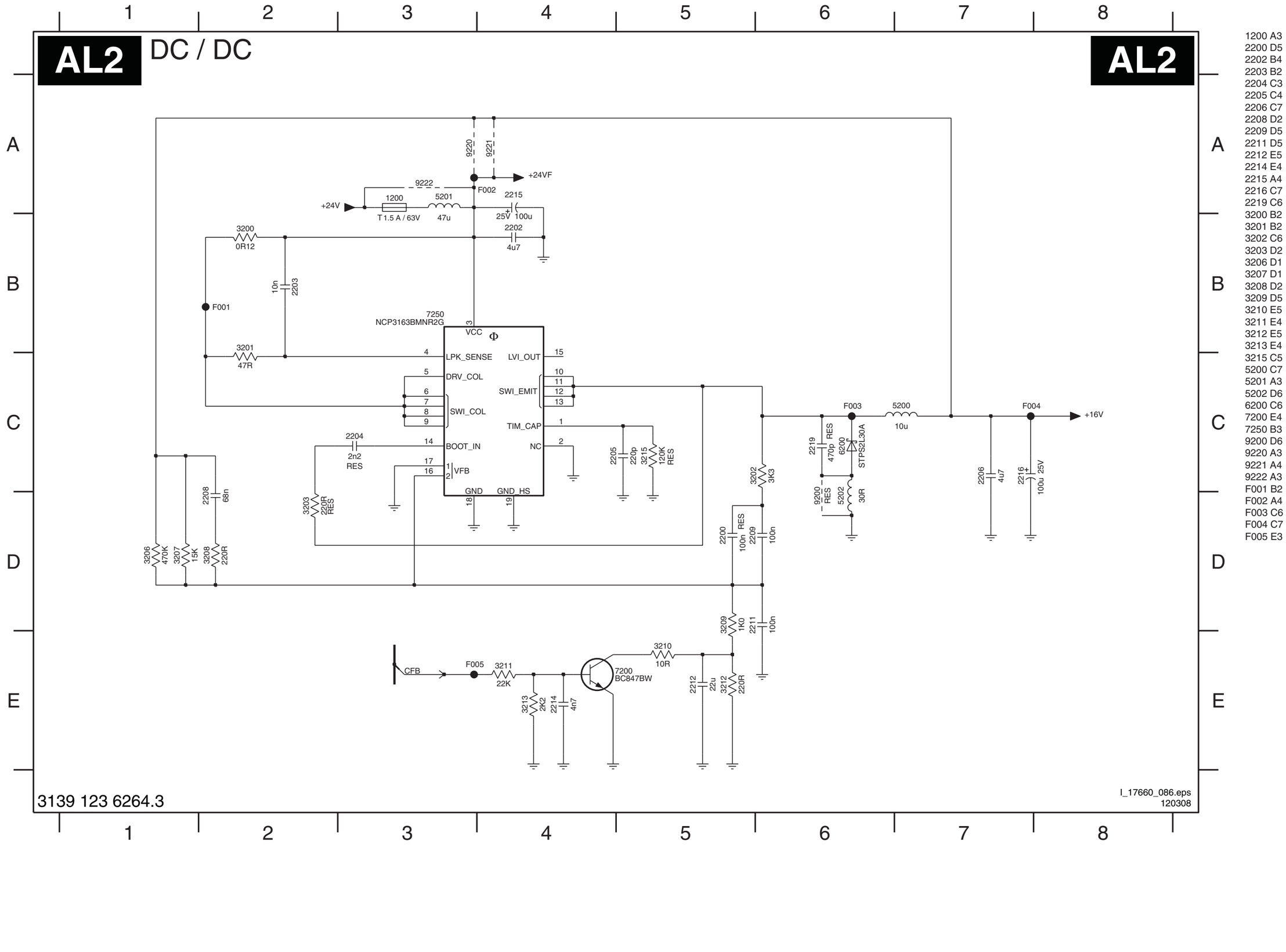
120308

2001 F2
2003 F10
2005 I10
2007 F2
2009 F10
2010 H2
2012 H10
2013 I2
2036 E4
2038 E12
3000 A1
3001 D1
3002 B2
3003 B2
3005 C1
3006 C2
3007 B1
3008 C1
3009 B1
3021 B3
3022 B3
3023 B3
3024 B11
3025 B11
3026 B11
3030 E2
3032 E10
3033 E2
3035 E11
3036 F2
3038 F11
3039 H2
3040 F2
3041 F3
3042 E4
3043 G2
3044 G3
3045 H3
3046 G4
3047 H4
3050 C13
3051 C13
3052 D13
3053 D13
3054 D13
3055 D13
3056 D13
3057 E13
3058 E13
3059 E13
3129 C5
3130 C5
3131 C5
3132 D5
3133 D5
3134 D5
3135 D5
3136 E5
3137 E5
3138 E5
3140 F4
3141 F4
3142 H4
3143 H4
3144 I4
3145 I4
3148 F12
3150 G12
3151 I10
3152 I12
3153 H13
3160 F10
3161 F12
3163 G10
3164 G12
3191 F12
3192 F12
3193 H12
3194 H12
3195 I12
3196 I12
6000 C2
6004 F2
6006 G2
6008 H2
6016 F10
6018 G10
6020 I10
6021 F4
6022 G4
6023 H4
6024 F12
6025 G12
6026 H12
7003 A3
7004 A6
7005 A9
7006 A11
7010 C2
7011 B2
7064 F5
7065 G5
7066 H5
7067-1 E4
7067-2 G4
7067-3 H4
7067-4 F8
7072 F13
7073 G13
7074 H13
7075-1 F12
7075-2 G12
7075-3 H12
7075-4 G8
9001 A8
9002 F9
9003 F9
9004 A7
9005 G9
9007 G9
9008 H9
9009 I9
9010 A7
9011 A8
9013 A8
9016 A7
9017 A2
9018 A2
9019 A2
9020 A12
9021 A12
9022 A12
F037 E2
F050 C6
F052 D6
F053 F4
F054 D6
F055 G4
F056 E5
F057 H4
F058 E11
F059 F12
F060 G12
F061 I12
F070 C13
F072 D14
F074 D14
F076 E13

8 LED Lite-On Panel: DC / DC

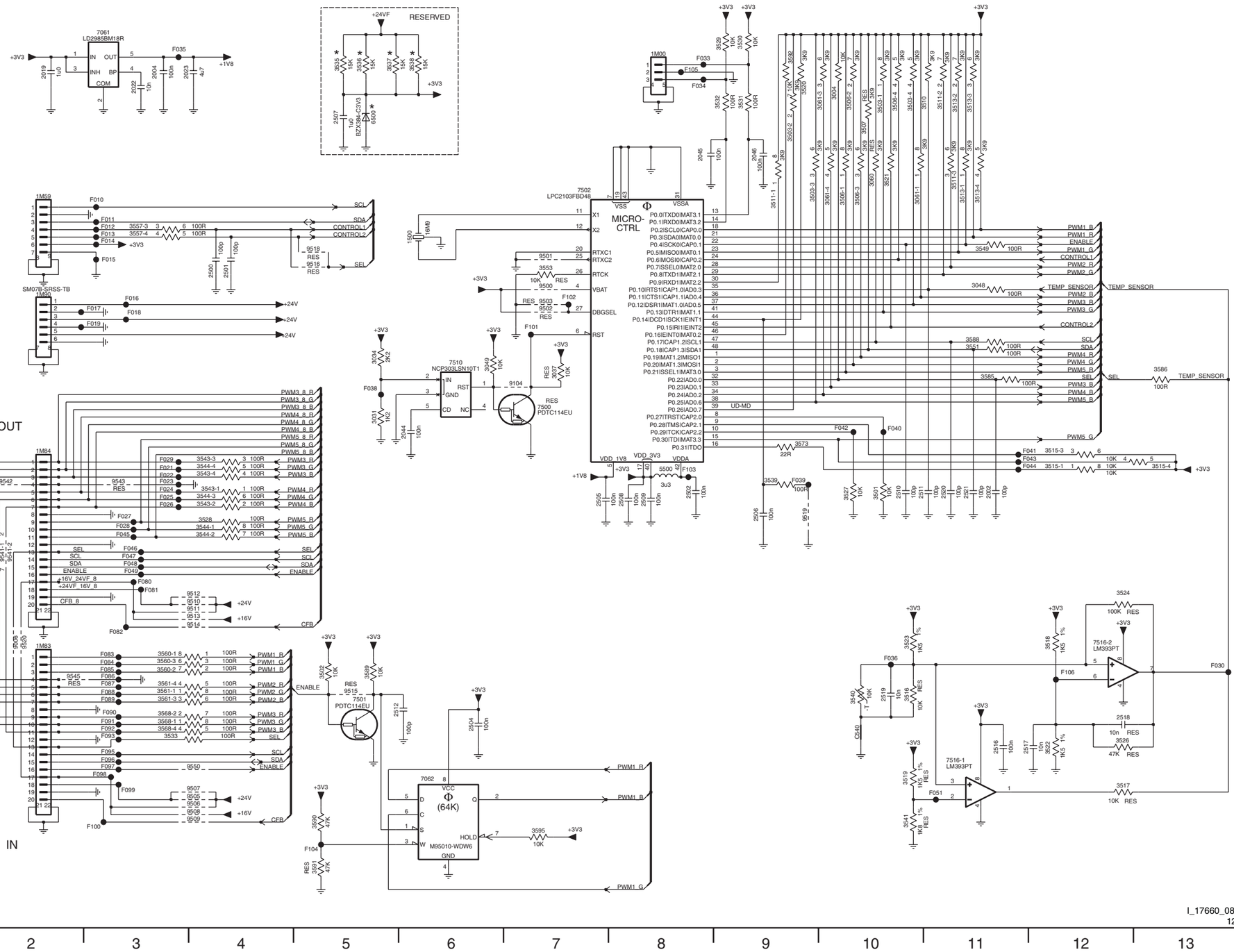


1200 A3
2200 D5
2202 B4
2203 B2
2204 C3
2205 C4
2206 C7
2208 D2
2209 D5
2211 D5
2212 E5
2214 E4
2215 A4
2216 C7
2219 C6
3200 B2
3201 B2
3202 C6
3203 D2
3206 D1
3207 D1
3208 D2
3209 D5
3210 E5
3211 E4
3212 E5
3213 E4
3215 C5
5200 C7
5201 A3
5202 D6
6200 C6
7200 E4
7250 B3
9200 D6
9220 A3
9221 A4
9222 A3
F001 B2
F002 A4
F003 C6
F004 C7
F005 E3

8 LED Lite-On Panel: uC Block

AL3 MICROCONTROLLER BLOCK

AL3



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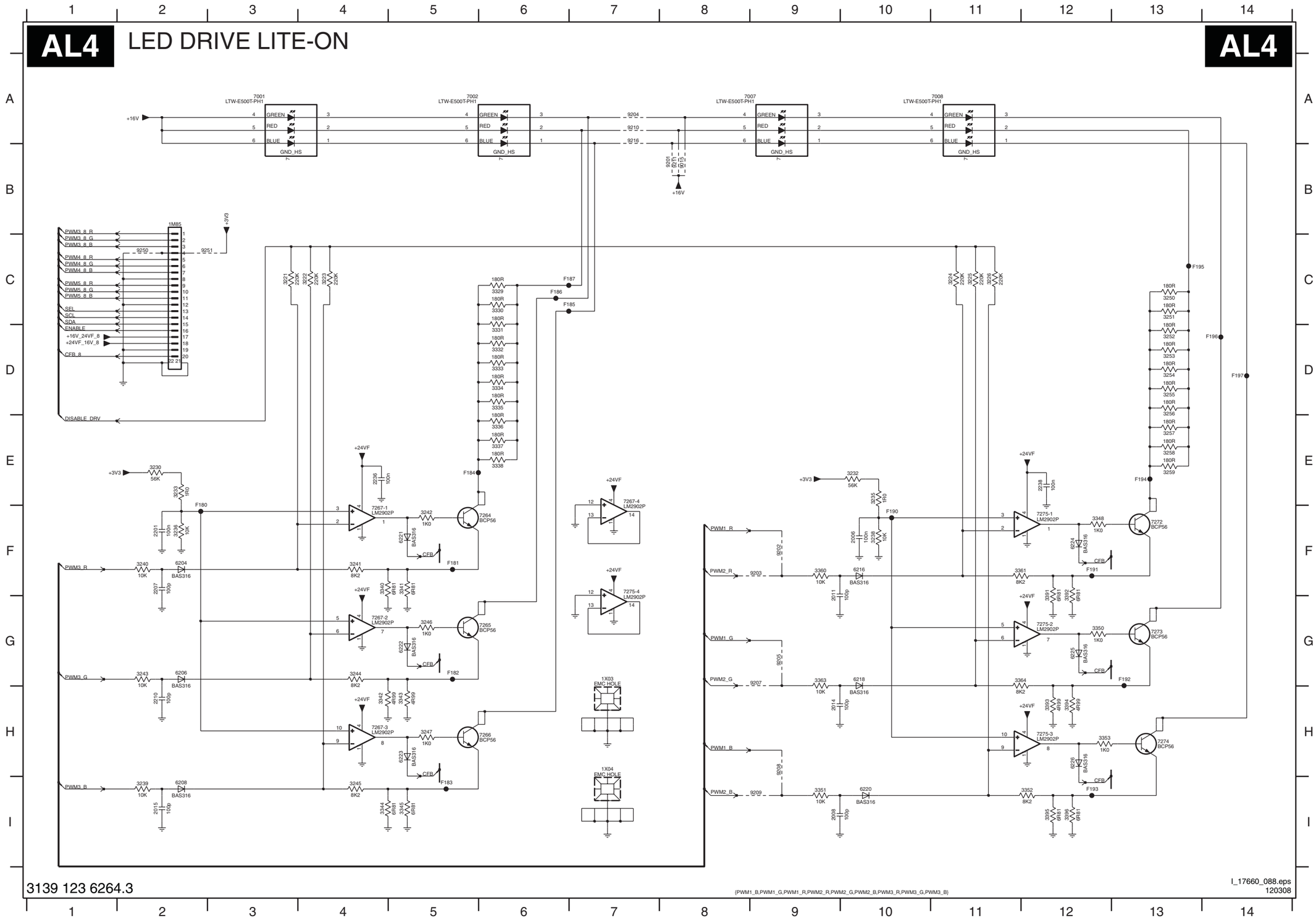
1500 C6	3589 G5
1M00 A8	3590 I5
1M59 C2	3591 I5
1M83 G2	3592 A9
1M84 E2	3595 I7
1M90 D2	5500 E8
2002 F11	6500 B5
2004 B3	7061 A3
2019 B2	7062 H6
2022 B3	7500 E7
2023 B3	7501 H5
2044 E6	7502 C7
2045 B8	7510 D6
2046 B9	7516-1 H11
2500 D4	7516-2 G12
2501 D4	9006 G2
2502 F8	9104 E7
2504 H6	9500 D7
2505 F7	9501 C7
2506 F9	9502 D7
2507 B5	9503 D7
2508 F8	9505 I4
2509 F8	9506 I4
2510 F10	9507 H4
2511 F10	9508 I4
2512 H5	9509 I4
2516 H11	9510 G4
2517 H11	9511 G4
2518 H12	9512 G4
2519 H10	9513 G4
2520 F11	9514 G4
2521 F11	9515 H5
3004 B10	9516 C5
3031 E5	9518 C5
3034 D5	9519 F9
3037 D7	9520 G2
3048 D11	9540-1 F2
3049 D6	9540-2 F2
3060 C10	9540-3 F1
3061-1 C10	9540-4 F1
3061-3 B10	9541-1 F2
3061-4 C10	9541-2 F2
3501 F10	9541-3 F1
3502 G5	9541-4 F1
3503-1 B10	9542 F2
3503-2 B9	9543 F3
3503-3 C9	9544 G1
3503-4 B10	9545 G2
3506-1 C10	9550 H4
3506-2 B10	C540 H10
3506-3 C10	F010 C3
3506-4 B10	F011 C3
3507 B10	F012 C3
3510 B11	F013 C3
3511-1 C9	F014 C3
3511-2 B11	F015 C3
3511-3 C11	F016 D3
3513-1 C11	F017 D3
3513-2 B11	F018 D3
3513-3 B11	F019 D3
3513-4 C11	F021 E3
3515-1 E12	F022 E3
3515-3 E12	F023 F3
3515-4 E13	F024 F3
3516 H10	F025 F3
3517 H12	F026 F3
3518 G12	F027 F3
3519 H10	F028 F3
3520 B9	F029 E3
3521 C10	F030 G13
3522 H12	F033 B8
3523 G10	F034 B8
3524 G12	F035 A3
3526 H12	F036 G10
3527 F10	F038 E5
3528 F4	F039 F9
3529 A9	F040 E10
3530 A9	F041 E12
3531 B9	F042 E10
3532 B9	F043 E12
3533 H3	F044 E12
3535 B5	F045 F3
3536 B5	F046 F3
3537 B5	F047 F3
3538 B6	F048 F3
3539 F9	F049 F3
3540 H10	F051 H11
3541 I10	F080 F3
3543-1 F4	F081 G3
3543-2 F4	F082 G3
3543-3 E4	F083 G3
3543-4 E4	F084 G3
3544-1 F4	F085 G3
3544-2 F4	F086 G3
3544-3 F4	F087 G3
3544-4 E4	F088 H3
3549 C11	F089 H3
3551 D11	F090 H3
3553 D7	F091 H3
3557-3 C3	F092 H3
3557-4 C3	F093 H3
3560-1 G3	F095 H3
3560-2 G3	F096 H3
3560-3 G3	F097 H3
3561-1 H3	F098 H3
3561-3 H3	F099 H3
3561-4 G3	F100 I3
3568-1 H3	F101 D7
3568-2 H3	F102 D7
3568-4 H3	F103 E8
3573 E9	F104 I5
3585 E11	F105 B8
3586 D13	F106 G12
3588 D11	

8 LED Lite-On Panel: LED Drive

AL4 LED DRIVE LITE-ON **AL4**



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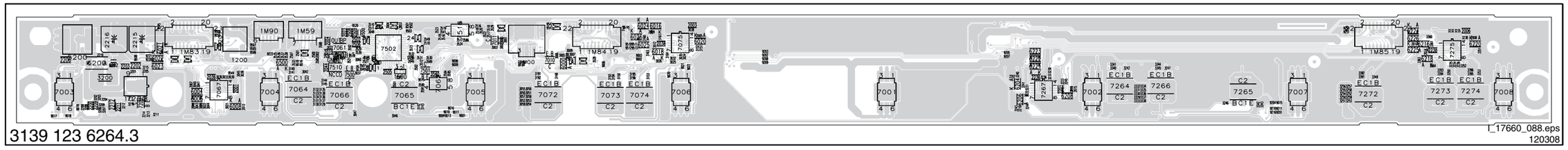
120308

1M85 B2
1X03 G7
1X04 H7
2006 F10
2008 I9
2011 F9
2014 H9
2015 I2
2201 F2
2207 F2
2210 H2
2236 E4
2238 E12
3221 C3
3222 C4
3223 C4
3224 C11
3225 C11
3226 C11
3230 E2
3232 E10
3233 E2
3235 E10
3236 F2
3238 F10
3239 I2
3240 F2
3241 F4
3242 F5
3243 G2
3244 G4
3245 I4
3246 G5
3247 H5
3250 C13
3251 C13
3252 D13
3253 D13
3254 D13
3255 D13
3256 D13
3257 E13
3258 E13
3259 E13
3329 C6
3330 C6
3331 D6
3332 D6
3333 D6
3334 D6
3335 D6
3336 E6
3337 E6
3338 E6
3340 F4
3341 F5
3342 H4
3343 H5
3344 I4
3345 I5
3348 F12
3350 G12
3351 I9
3352 I12
3353 H12
3360 F9
3361 F11
3363 G9
3364 G11
3391 F12
3392 F12
3393 H12
3394 H12
3395 I12
3396 I12
6204 F2
6206 G2
6208 I2
6216 F10
6218 G10
6220 I10
6221 F5
6222 G5
6223 H5
6224 F12
6225 G12
6226 H12
7001 A3
7002 A5
7007 A9
7008 A11
7264 F6
7265 G6
7266 H6
7267-1 F4
7267-2 G4
7267-3 H4
7267-4 E7
7272 F13
7273 G13
7274 H13
7275-1 F12
7275-2 G12
7275-3 H12
7275-4 F7
9015 B8
9201 B8
9202 F9
9203 F9
9204 A7
9205 G9
9207 G9
9208 H9
9209 I9
9210 A7
9211 B8
9216 A7
9250 C2
9251 C2
F180 F2
F181 F5
F182 G5
F183 I5
F184 E5
F185 C7
F186 C6
F187 C7
F190 F10
F191 F12
F192 G13
F193 I12
F194 E13
F195 C13
F196 D14
F197 D14

Layout 8 LED Lite-On Panel (Top Side)

1200 --- 2008 --- 2046 --- 2215 --- 2511 --- 3007 --- 3036 --- 3051 --- 3133 --- 3152 --- 3203 --- 3226 --- 3247 --- 3333 --- 3352 --- 3506 --- 3526 --- 3543 --- 3591 --- 6022 --- 6224 --- 7062 --- 7272 --- 9007 --- 9200 --- 9250 --- 9514 ---
1500 --- 2009 --- 2200 --- 2216 --- 2512 --- 3008 --- 3037 --- 3052 --- 3134 --- 3153 --- 3206 --- 3230 --- 3250 --- 3334 --- 3353 --- 3507 --- 3527 --- 3544 --- 3592 --- 6023 --- 6225 --- 7064 --- 7273 --- 9008 --- 9201 --- 9251 --- 9515 ---
1M00 --- 2010 --- 2201 --- 2219 --- 2516 --- 3009 --- 3038 --- 3053 --- 3135 --- 3160 --- 3207 --- 3232 --- 3251 --- 3335 --- 3360 --- 3510 --- 3528 --- 3549 --- 3595 --- 6024 --- 6226 --- 7065 --- 7274 --- 9009 --- 9202 --- 9500 --- 9516 ---
1M59 --- 2011 --- 2202 --- 2236 --- 2517 --- 3021 --- 3039 --- 3054 --- 3136 --- 3161 --- 3208 --- 3233 --- 3252 --- 3336 --- 3361 --- 3511 --- 3529 --- 3551 --- 5200 --- 6025 --- 6500 --- 7066 --- 7275 --- 9010 --- 9203 --- 9501 --- 9518 ---
1M83 --- 2012 --- 2203 --- 2238 --- 2518 --- 3022 --- 3040 --- 3055 --- 3137 --- 3163 --- 3209 --- 3235 --- 3253 --- 3337 --- 3363 --- 3513 --- 3530 --- 3553 --- 5201 --- 6026 --- 7001 --- 7067 --- 7500 --- 9011 --- 9204 --- 9502 --- 9519 ---
1M84 --- 2013 --- 2204 --- 2500 --- 2519 --- 3023 --- 3041 --- 3056 --- 3138 --- 3164 --- 3210 --- 3236 --- 3254 --- 3338 --- 3364 --- 3515 --- 3531 --- 3557 --- 5202 --- 6200 --- 7002 --- 7072 --- 7501 --- 9013 --- 9205 --- 9503 --- 9520 ---
1M85 --- 2014 --- 2205 --- 2501 --- 2520 --- 3024 --- 3042 --- 3057 --- 3140 --- 3191 --- 3211 --- 3238 --- 3255 --- 3340 --- 3391 --- 3516 --- 3532 --- 3560 --- 5500 --- 6204 --- 7003 --- 7073 --- 7502 --- 9015 --- 9207 --- 9505 --- 9540 ---
1M90 --- 2015 --- 2206 --- 2502 --- 2521 --- 3025 --- 3043 --- 3058 --- 3141 --- 3192 --- 3212 --- 3239 --- 3256 --- 3341 --- 3392 --- 3517 --- 3533 --- 3561 --- 6000 --- 6206 --- 7004 --- 7074 --- 7510 --- 9016 --- 9208 --- 9506 --- 9541 ---
2001 --- 2019 --- 2207 --- 2504 --- 3000 --- 3026 --- 3044 --- 3059 --- 3142 --- 3193 --- 3213 --- 3240 --- 3257 --- 3342 --- 3393 --- 3518 --- 3535 --- 3568 --- 6004 --- 6208 --- 7005 --- 7075 --- 7516 --- 9017 --- 9209 --- 9507 --- 9542 ---
2002 --- 2022 --- 2208 --- 2505 --- 3001 --- 3030 --- 3045 --- 3060 --- 3143 --- 3194 --- 3215 --- 3241 --- 3258 --- 3343 --- 3394 --- 3519 --- 3536 --- 3573 --- 6006 --- 6216 --- 7006 --- 7200 --- 9001 --- 9018 --- 9210 --- 9508 --- 9543 ---
2003 --- 2023 --- 2209 --- 2506 --- 3002 --- 3031 --- 3046 --- 3061 --- 3144 --- 3195 --- 3221 --- 3242 --- 3259 --- 3344 --- 3395 --- 3520 --- 3537 --- 3585 --- 6008 --- 6218 --- 7007 --- 7250 --- 9002 --- 9019 --- 9211 --- 9509 --- 9544 ---
2004 --- 2036 --- 2210 --- 2507 --- 3003 --- 3032 --- 3047 --- 3129 --- 3145 --- 3196 --- 3222 --- 3243 --- 3329 --- 3345 --- 3396 --- 3521 --- 3538 --- 3586 --- 6016 --- 6220 --- 7008 --- 7264 --- 9003 --- 9020 --- 9216 --- 9510 --- 9545 ---
2005 --- 2038 --- 2211 --- 2508 --- 3004 --- 3033 --- 3048 --- 3130 --- 3148 --- 3200 --- 3223 --- 3244 --- 3330 --- 3348 --- 3501 --- 3522 --- 3539 --- 3588 --- 6018 --- 6221 --- 7010 --- 7265 --- 9004 --- 9021 --- 9220 --- 9511 --- 9550 ---
2006 --- 2044 --- 2212 --- 2509 --- 3005 --- 3034 --- 3049 --- 3131 --- 3150 --- 3201 --- 3224 --- 3245 --- 3331 --- 3350 --- 3502 --- 3523 --- 3540 --- 3589 --- 6020 --- 6222 --- 7011 --- 7266 --- 9005 --- 9022 --- 9221 --- 9512 ---
2007 --- 2045 --- 2214 --- 2510 --- 3006 --- 3035 --- 3050 --- 3132 --- 3151 --- 3202 --- 3225 --- 3246 --- 3332 --- 3351 --- 3503 --- 3524 --- 3541 --- 3590 --- 6021 --- 6223 --- 7061 --- 7267 --- 9006 --- 9104 --- 9222 --- 9513 ---



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SSB: DC / DC

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

B01A DC / DC

B01A

A B C D E F G H

12V/3V3 CONVERSION

12V/1V2 CONVERSION

12V UNDER-VOLTAGE DETECTION

BOOSTER

AUDIO-PROT

SUPPLY-FAULT

VSW

+12VF

+12V

+3V3

+3V3F

+1V2-PNX8541

+1V2-STANDBY

3V3-ST

SENSE+1V2-PNX8541

ENABLE-3V3

PROT-DC

ENABLE-1V2

GND-SIG

7U00-2 BC847BPN

7U00-1 BC847BPN

7U09 BC847BW

7U04-2 BC847BS

7U04-1 BC847BS

7U01-1 BC857BS RES

7U01-2 BC857BS RES

7U0A NCP5422ADR2G

7U08 FDS4488

7U02 FDS4488

7U05 FDS4488

7U06 FDS4488

7U07-1 BC847BS

7U07-2 BC847BS

7U03 BC817-25W

6U02 BAS316

6U00 BAS316

6U01 BAS316

6U04 PDZ4.7B RES

6U03 PDZ18-B

FU00 FU01 FU02 FU03 FU04 FU05 FU06 FU07 FU08 FU09 FU0A FU0B FU0D FU0E

CU26

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SSB: DC / DC

B01B DC / DC

B01B

USB CONNECTOR

1M01 B4B-EH-A

1M99 B8B-PH-K-S

1M95 B11B-PH-K

RESERVED

* IN CASE OF ONLY-ANALOG TUNER

3139 123 6214.4

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110308

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1M95 D1	3U84 E2	IU44 F3
1M99 B1	3U85 F3	IU45 F4
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1U02 B1	3U87 E4	IU47 F3
2U18 A1	3U88 F2	IU8F A7
2U19 B2	3U89 F3	IU8G B7
2U20 B2	5U08 E6	
2U21 B1	6U0B E6	
2U22 D1	6U0C E6	
2U23 D1	6U40 E2	
2U24 C3	7U0M C5	
2U25 C4	7U0N D3	
2U26 D5	7U0P F5	
2U27 F6	7U0Q F7	
2U28 F6	7U0R B3	
2U29 E6	7U40-1 E3	
2U2A F6	7U40-2 E3	
2U2B E7	7U41-1 E4	
2U30 D1	7U41-2 F3	
2U31 D1	7U50 E8	
2U32 D1	7U51 D9	
2U33 F1	7U70-1 A6	
2U34 F1	7U70-2 B6	
2U35 F1	7U71 A8	
2U36 F2	7U72 B8	
2U40 F2	FU10 E1	
2U50 E9	FU11 E1	
2U60 A3	FU12 E1	
2U62 A5	FU13 B1	
2U63 B5	FU14 C1	
2U64 A6	FU15 C1	
2U65 A7	FU16 C1	
2U66 C6	FU17 C1	
2U67 C7	FU18 C1	
2U68 B8	FU19 B1	
2U69 B8	FU1A D1	
2U70 C8	FU1B E1	
2U71 C8	FU1C E1	
3U3V D5	FU1D E1	
3U3W C4	FU1E B1	
3U3Y F5	FU1F C5	
3U3Z F5	FU1G E7	
3U40 F6	FU20 E1	
3U42 F7	FU21 E1	
3U43 F7	FU22 E1	
3U44 E7	FU23 E1	
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3U46 C4	FU25 B1	
3U47 F6	FU26 B1	
3U48 B3	FU27 B3	
3U49 B3	FU28 A8	
3U4A C4	FU29 B8	
3U50 D8	FU40 F4	
3U51 D8	IU34 C4	
3U52 D8	IU35 D4	
3U53 E9	IU36 F5	
3U54 E9	IU37 F6	
3U55 C1	IU38 F6	
3U56 C1	IU39 F7	
3U57 C1	IU3B F6	
3U58 C1	IU3C C4	
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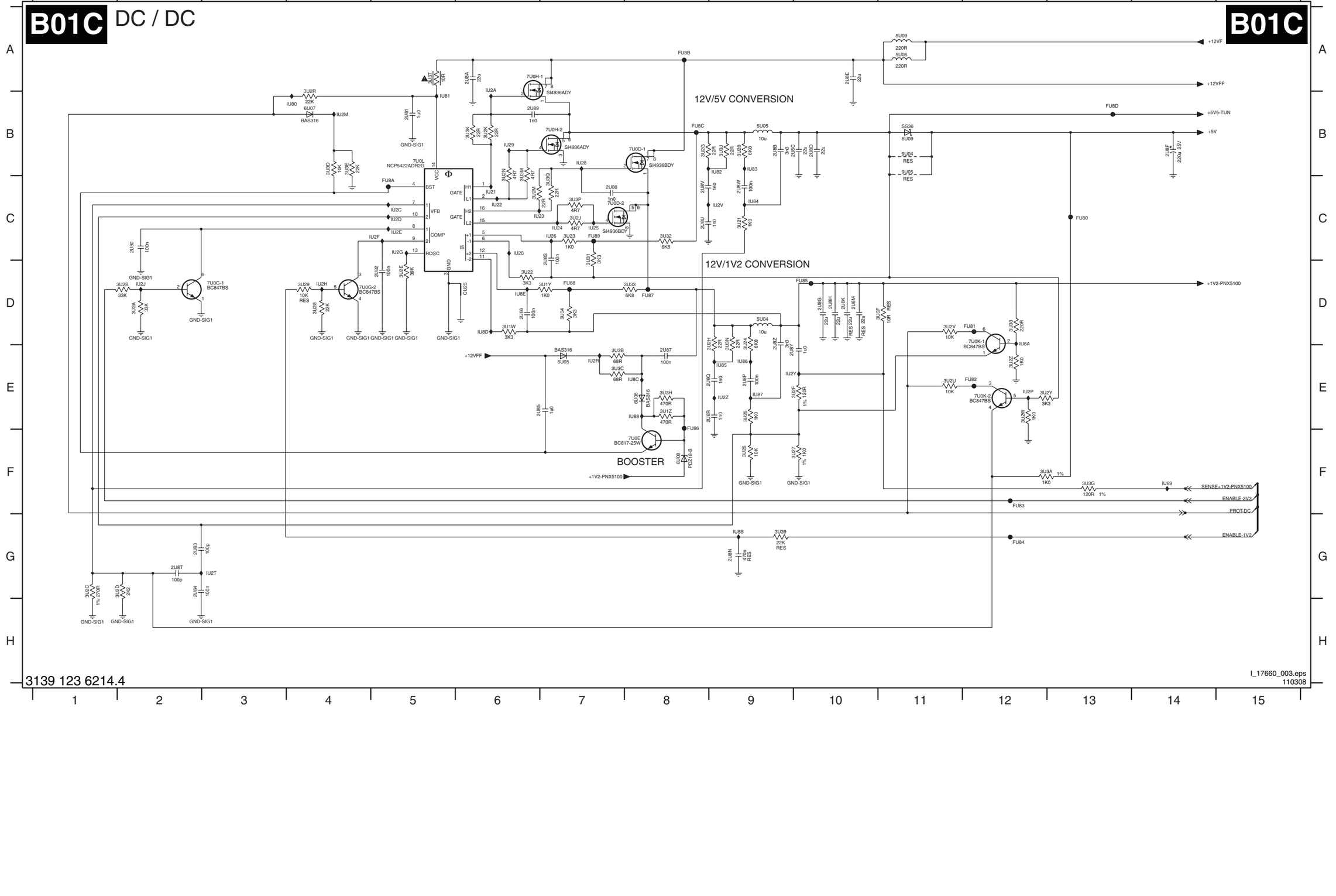
3U61 A5	IU3E A6	
3U62 A5	IU3F A6	
3U63 A5	IU3G A7	
3U64 B5	IU3H A6	
3U65 A6	IU3K B6	
3U66 B6	IU3M B6	
3U67 B6	IU3N B7	
3U68 C6	IU3P C6	
3U69 C6	IU3R D9	
3U6A A7	IU3S D8	
3U6B B7	IU3T D9	
3U80 E3	IU40 E2	
3U81 E3	IU41 E3	
3U82 E3	IU42 E3	

SSB: DC / DC

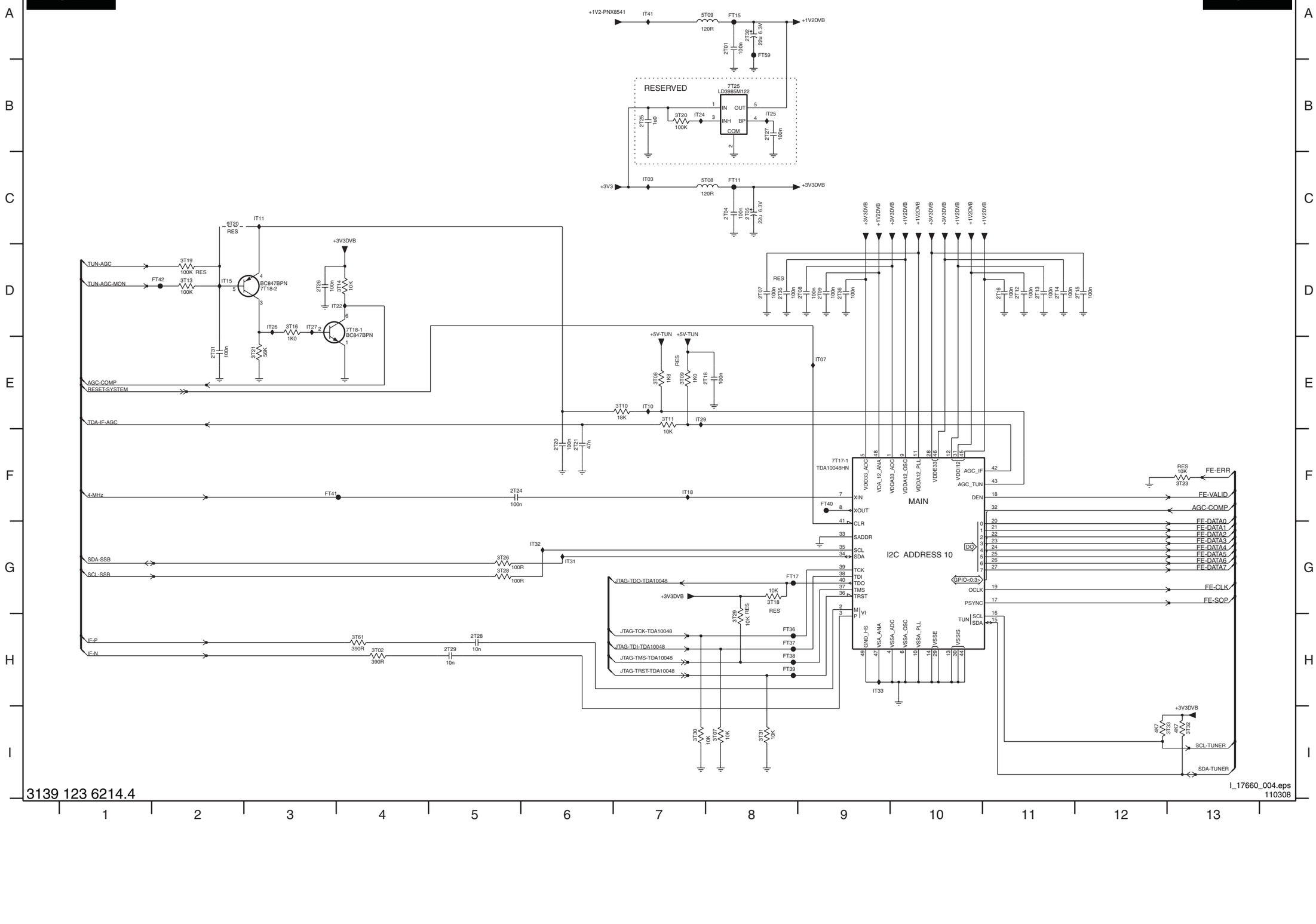
2U80 C2 2U81 B5 2U82 D5 2U83 G2 2U84 G2 2U85 E6 2U86 D6 2U87 E8 2U88 C7 2U89 B6 2U8A A6 2U8B B9 2U8C B10 2U8D B10 2U8E A10 2U8F B14 2U8G D10 2U8H D10 2U8K D10 2U8M D10 2U8N G9 2U8P E9 2U8Q E9 2U8R E9 2U8S C7 2U8T G2 2U8U C8 2U8V C8 2U8W C9 2U8Y E9 2U8Z D9 3U1W D6 3U1Y D7 3U1Z E8 3U20 B9 3U21 C9 3U22 D6 3U23 C7 3U24 D9 3U25 E9 3U26 F9 3U27 F10 3U28 D4 3U29 D4 3U2A D2 3U2B D2 3U2C G1 3U2D G2 3U2E D5 3U2F E10 3U2G B8 3U2H D9 3U2J C7 3U2K B6 3U2M C6 3U2N B6 3U2R B4 3U2U E11 3U2V D11 3U2W E12 3U2Y E12 3U30 D12 3U31 C7 3U32 C8 3U33 D8 3U34 D7 3U39 G9 3U3A F12 3U3B E7 3U3C E7 3U3D B4 3U3E B4 3U3F D11 3U3G F13 3U3H E8 3U3J B9 3U3K B6 3U3M B6 3U3N D9 3U3P C7 3U3Q C7 3U3T A5 5U04 D9 5U05 B9 5U06 A11 5U09 A11 6U05 E7 6U06 E8 6U07 B4 6U08 F8 7U0D-1 B8 7U0D-2 C7 7U0E F8 7U0G-1 D2 7U0G-2 D4 7U0H-1 A6 7U0H-2 B7 7U0K-1 D12 7U0K-2 E12 7U0L B5 9U04 B11 9U05 B11 CU25 D6 FU80 C13 FU81 D12 FU82 E12 FU83 F12 FU84 G12 FU85 D10 FU87 D8 FU88 D7 FU89 F12 FU8A C5 FU8B A8 FU8C B8 FU8D B13 IU20 C6 IU21 C6 IU22 C6 IU23 C6 IU24 C7 IU25 C7 IU26 C7 IU28 B7 IU29 B6 IU2A A6 IU2C C5 IU2D C5 IU2E C5 IU2F C5 IU2G C5 IU2H D4 IU2J D2 IU2M B4 IU2P E12 IU2R E7 IU2V C9 IU2Y E9 IU80 B4 IU81 B5 IU82 B9 IU83 B9 IU84 C9 IU85 E9 IU86 E9 IU87 E9 IU88 E8 IU89 F14 IU8A D12 IU8B G9 IU8C E8 IU8D D6 IU8E D6



SSB: Channel Decoder

B02A CHANNEL DECODER

B02A



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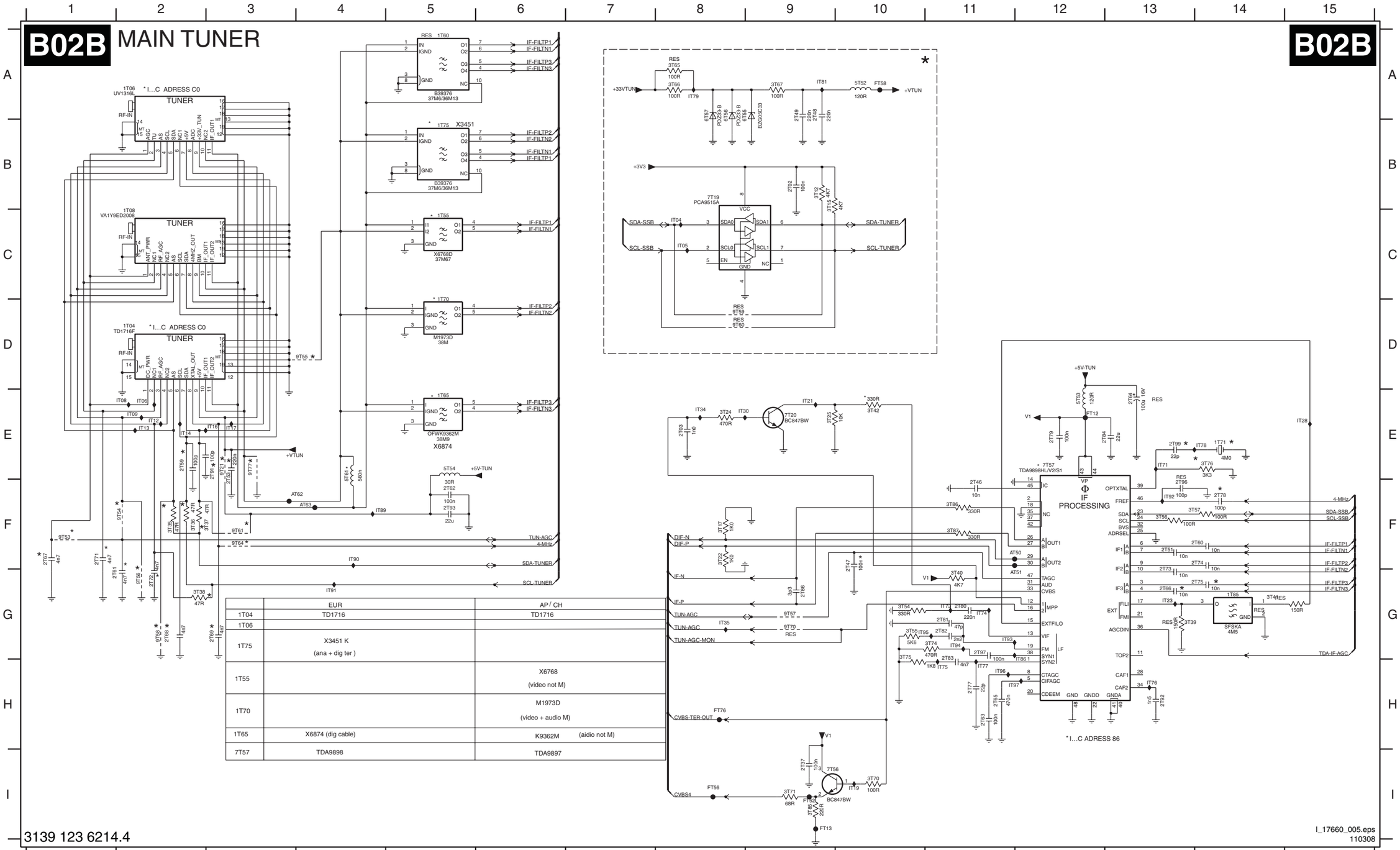
2T01 A8
2T04 C8
2T05 C8
2T07 D8
2T08 D9
2T09 D9
2T12 D11
2T13 D11
2T14 D11
2T15 D12
2T16 D11
2T18 E7
2T20 F6
2T21 F6
2T24 F5
2T25 B7
2T26 D3
2T27 B8
2T28 H4
2T29 H5
2T31 E2
2T32 A8
2T35 D8
2T36 D9
3T02 H4
3T07 H8
3T08 E7
3T09 E7
3T10 E7
3T11 E7
3T13 D2
3T14 D4
3T16 D3
3T18 G8
3T19 D2
3T20 B7
3T21 E3
3T23 F13
3T26 G5
3T28 G5
3T29 H8
3T30 H7
3T31 I8
3T32 I13
3T33 I12
3T61 H4
5T08 C8
5T09 A8
7T17-1 F9
7T18-1 D4
7T18-2 D3
7T25 B8
9T20 C2
FT11 C8
FT15 A8
FT17 G8
FT36 H8
FT37 H8
FT38 H8
FT39 H8
FT40 F9
FT41 F3
FT42 D2
FT59 A8
IT03 C7
IT07 E9
IT10 E7
IT11 C3
IT15 D2
IT18 F7
IT22 D4
IT24 B7
IT25 B8
IT26 D3
IT27 D3
IT29 E7
IT31 G6
IT32 G6
IT33 H9
IT41 A7

SSB: Main Tuner

1T04 D2 1T06 A2 1T08 C2 1T55 C5 1T60 A5 1T65 E5 1T70 D5 1T71 E14 1T75 B5 1T85 G14 2T02 B9 2T03 E8 2T37 I9 2T46 F11 2T47 F10 2T48 A9 2T49 A9 2T51 F13 2T53 E3 2T59 E2 2T60 F14 2T61 G2 2T63 H11 2T64 E13 2T65 H11 2T66 G13 2T67 F1 2T68 G2 2T69 G3 2T71 F1 2T72 G2 2T73 G13 2T74 F14 2T75 G14 2T77 H11 2T78 F14 2T79 E12 2T80 G11 2T81 G11 2T82 G11 2T83 H11 2T84 E13 2T86 G9 2T91 E3 2T92 H13 2T93 F5 2T96 F13 2T97 G11 2T99 E12 3T12 B9 3T15 B9 3T17 F8 3T22 F8 3T24 E8 3T25 E9 3T35 F2 3T36 F2 3T37 F3 3T38 G2 3T39 G13 3T40 G11 3T41 G14 3T42 E10 3T54 G10 3T55 G10 3T56 F13 3T57 F13 3T65 A8 3T66 A8 3T67 A9 3T70 I10 3T71 I9 3T74 G11 3T75 G10 3T76 E14 3T85 I9 3T86 F11 3T87 F11 5T52 A10 5T53 E12 5T54 E5 5T61 E4 6T55 A9 6T56 A8 6T57 A8 7T19 B8 7T20 E9 7T56 I10 7T57 E12 9T21 E3 9T53 F1 9T54 F2 9T55 D4 9T56 G2 9T57 G9 9T58 G2 9T59 D8 9T60 D8 9T61 F3 9T64 F3 9T70 G9 9T77 E3 AT50 F12 AT51 G12 AT62 F4 AT63 F4 FT12 E12 FT13 I9 FT52 I9 FT56 I8 FT57 G14 FT58 A10 FT76 H8 IT04 C8 IT05 C8 IT06 E2 IT08 E2 IT09 E2 IT12 E2 IT13 E2 IT14 E2 IT16 E3 IT17 E3 IT19 I10 IT21 E9 IT23 G13 IT28 E15 IT30 E8 IT34 E8 IT35 F4 IT71 E13 IT73 G11 IT74 G11 IT75 A8 IT79 A8 IT81 A9 IT86 G12 IT89 F4 IT90 F4 IT91 G4 IT92 F13 IT93 H11 IT94 H11 IT96 H11 IT97 H11 IT99 G11 IT100 G11 IT101 G11 IT102 G11 IT103 G11 IT104 G11 IT105 G11 IT106 G11 IT107 G11 IT108 G11 IT109 G11 IT110 G11 IT111 G11 IT112 G11 IT113 G11 IT114 G11 IT115 G11 IT116 G11 IT117 G11 IT118 G11 IT119 G11 IT120 G11 IT121 G11 IT122 G11 IT123 G11 IT124 G11 IT125 G11 IT126 G11 IT127 G11 IT128 G11



	EUR	AP / CH
1T04	TD1716	TD1716
1T06		
1T75	X3451 K (ana + dig ter)	
1T55		X6768 (video not M)
1T70		M1973D (video + audio M)
1T65	X6874 (dig cable)	K9362M (aidio not M)
7T57	TDA9898	TDA9897

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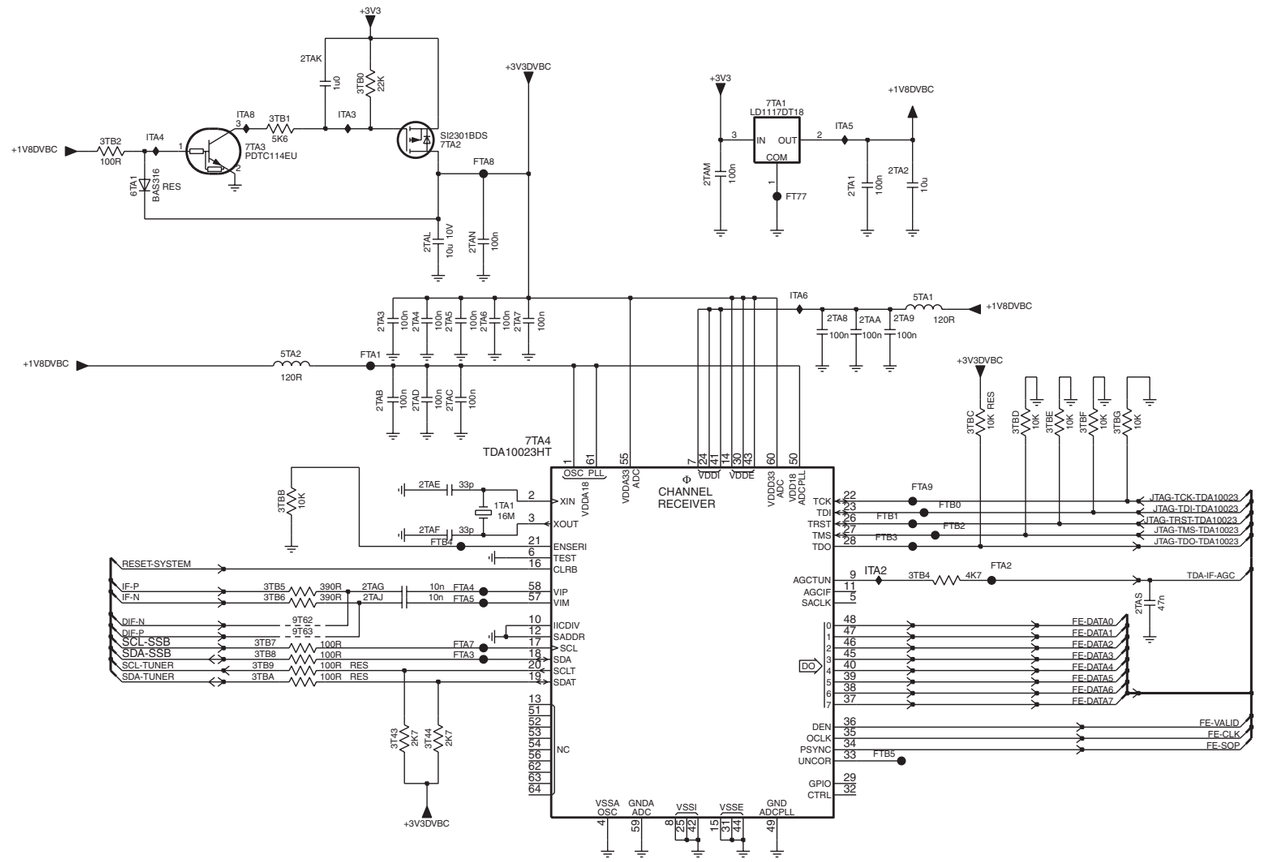
SSB: Channel Decoder DVB-C

B02C CHANNEL DECODER DVB-C



1TA1 E6
2TA1 C8
2TA2 C9
2TA3 D5
2TA4 D6
2TA5 D6
2TA6 D6
2TA7 D6
2TA8 D8
2TA9 D9
2TAA D9
2TAB D5
2TAC D6
2TAD D6
2TAE E6
2TAF E6
2TAG F5
2TAJ F5
2TAK B5
2TAL C6
2TAM C7
2TAN C6
2TAS F10
3T43 F6
3T44 F6
3TB0 B5
3TB1 C5
3TB2 C4
3TB4 E9
3TB5 F5
3TB6 F5
3TB7 F5
3TB8 F5
3TB9 F5
3TBA F5
3TBB E5
3TBC D9
3TBD D9
3TBE D10
3TBF D10
3TBG D10
5TA1 D9
5TA2 D5
6TA1 C4
7TA1 B8
7TA2 C6
7TA3 C5
7TA4 E6
9T62 F5
9T63 F5
FT77 C8
FTA1 D5
FTA2 E9
FTA3 F6
FTA4 F6
FTA5 F6
FTA7 F6
FTA8 C6
FTA9 E9
FTB0 E9
FTB1 E9
FTB2 E9
FTB3 E9
FTB4 E6
FTB5 G9
ITA2 E9
ITA3 C5
ITA4 C4
ITA5 C8
ITA6 D8
ITA8 C5

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SSB: STi7100: Control

B03A STI7100: CONTROL

B03A

Mode pin	EMI pin	Purpose
MODE[1:0]	EMIADDR[2:1]	PLL0 startup configuration
MODE[3:2]	EMIADDR[4:3]	PLL1 startup configuration
MODE[7:4]	EMIADDR[8:5]	Reserved
MODE[9:8]	EMIADDR[10:9]	EMI banks port size at boot
MODE[10]	PCMOUT4	STx71000 master/slave mode
MODE[12:11]	EMIADDR[13:12]	Reserved
MODE[13]	EMIADDR[14]	Long resetout mode
MODE[14]	EMIADDR[15]	Reserved
MODE[15]	PCMOUT3	Reserved
MODE[16]	PCMOUT2	Reserved

RESERVED

1A10 C4 IA25 D11
2A18 B2 IA26 G11
2A19 B2 IA27 G11
2A20 B3 IA28 F11
2A21 C6 IA29 G6
2A22 D3 IA30 G7
2A23 D4
2A24 F12
2A25 G12
2A26 G6
3A01 D12
3A02 D12
3A13-1 C9
3A13-2 C7
3A13-3 C9
3A13-4 C7
3A14 B9
3A16 B7
3A18 B9
3A19 H1
3A20-1 A9
3A20-2 A9
3A20-3 A9
3A20-4 A9
3A21 G3
3A25-1 C8
3A25-2 C9
3A25-3 C8
3A25-4 C9
3A26 C6
3A27 C4
3A28 C4
3A29-1 E3
3A29-2 E3
3A29-3 F3
3A29-4 E3
3A30-1 F3
3A30-2 F3
3A30-3 F3
3A30-4 F3
3A31-2 G3
3A31-3 G1
3A31-4 H3
3A32-1 G3
3A32-3 H3
3A33 B11
3A34 F12
3A35 H3
3A36-1 H3
3A36-2 H3
3A37-1 D7
3A37-2 D7
3A37-3 D7
3A38-1 D7
3A38-2 D7
3A38-3 D7
3A38-4 D7
3A39-1 D7
3A39-2 D7
3A39-3 D7
3A39-4 D7
3A40-1 E7
3A40-2 E7
3A40-3 E7
3A41-1 E7
3A41-2 E7
3A41-3 E7
3A41-4 E7
3A42-1 E7
3A42-2 E7
3A42-3 E7
3A42-4 E7
3A44 D11
3A45 D12
3A46-1 B7
3A46-2 B7
3A46-3 B6
3A46-4 B6
3A47 G5
3A48 G5
5A10 A2
7A00-4 A10
7A10-1 C3
7A10-2 C4
7A10-3 C6
7A10-4 C2
7A10-5 C2
7A10-6 D2
7A11 G6
7A12 C4
9A21 C5
9A22 C5
9A23 G7
9A24 H7
9A25 F12
FA10 C7
FA11 B9
FA12 G6
IA10 C9
IA11 D9
IA12 F12
IA16 C4
IA17 C5
IA18 D4
IA19 A3
IA20 C3
IA21 C5
IA22 C6
IA23 B11

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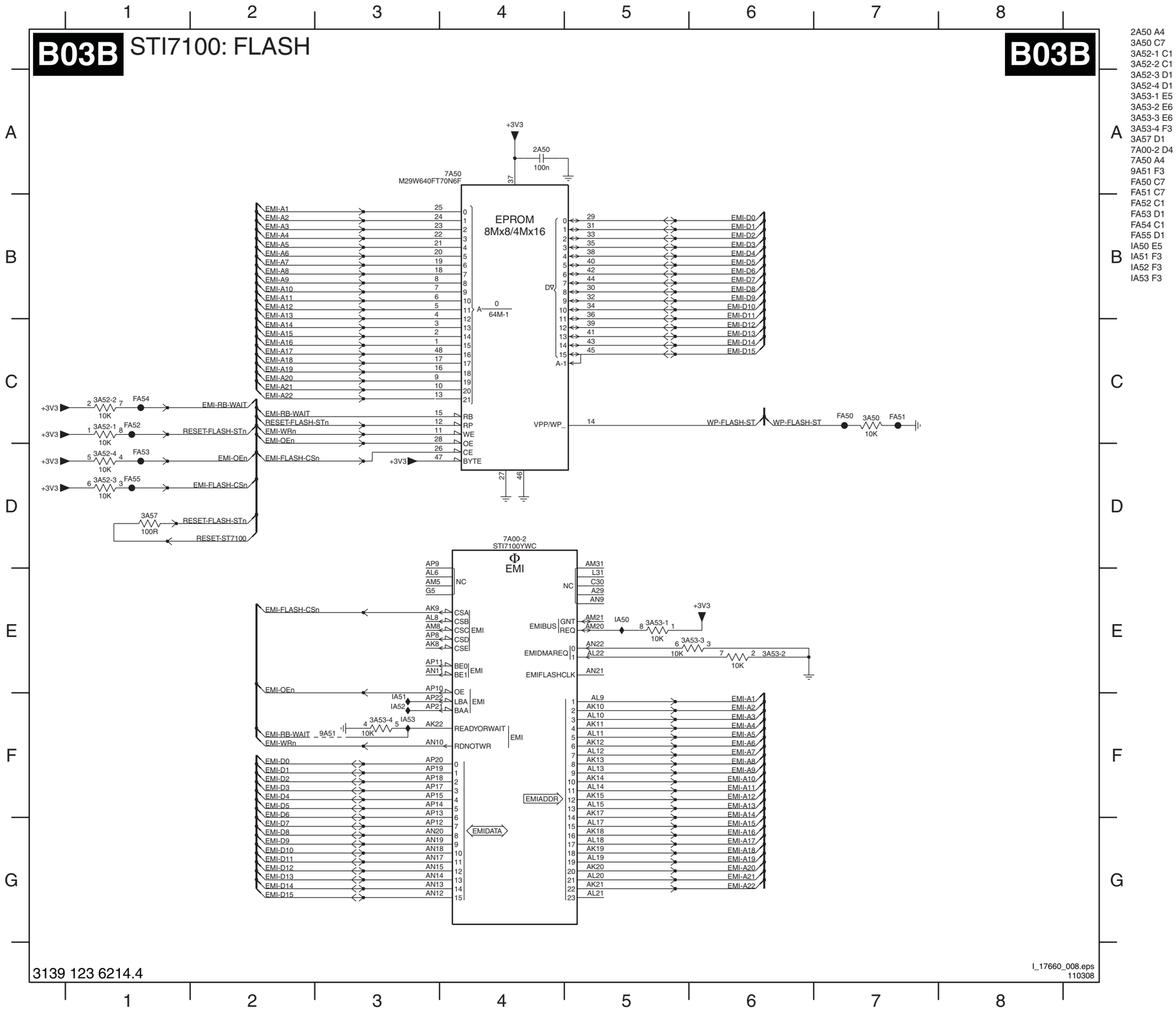
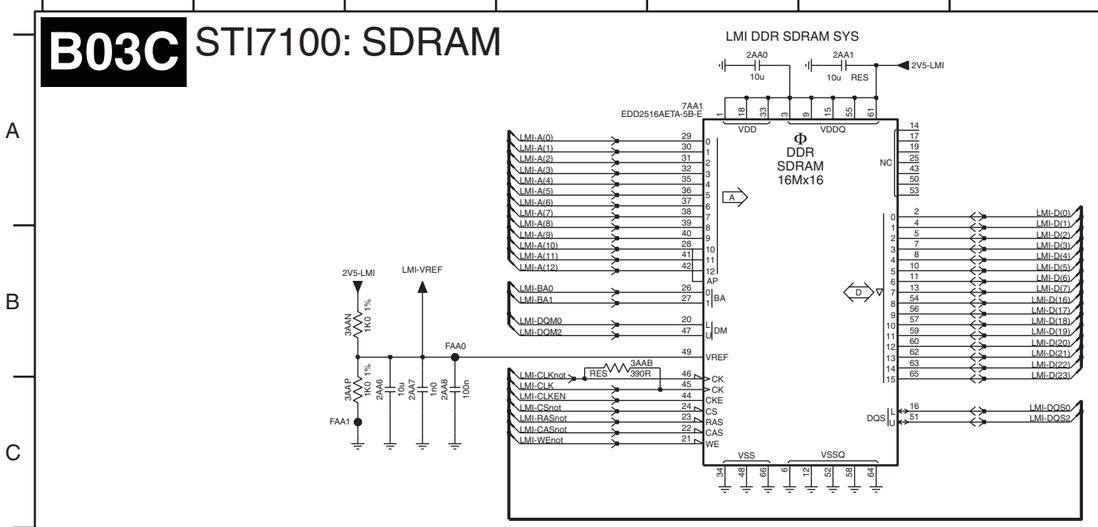
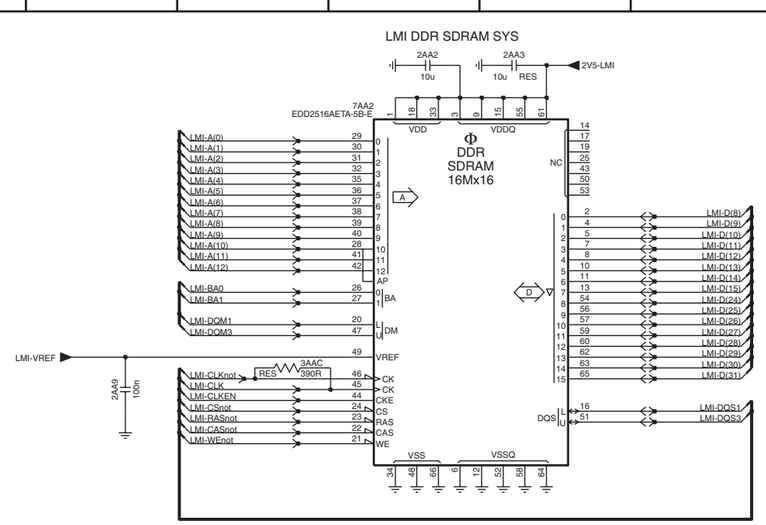
SSB: STi7100: Flash

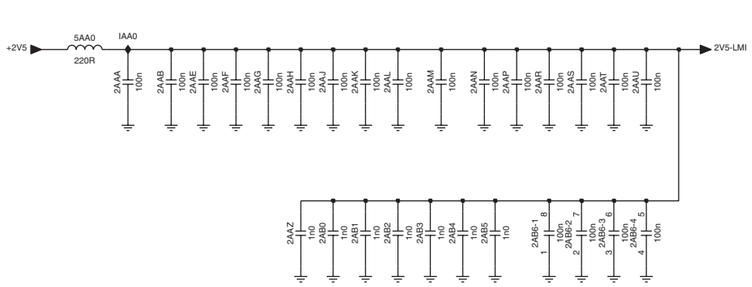


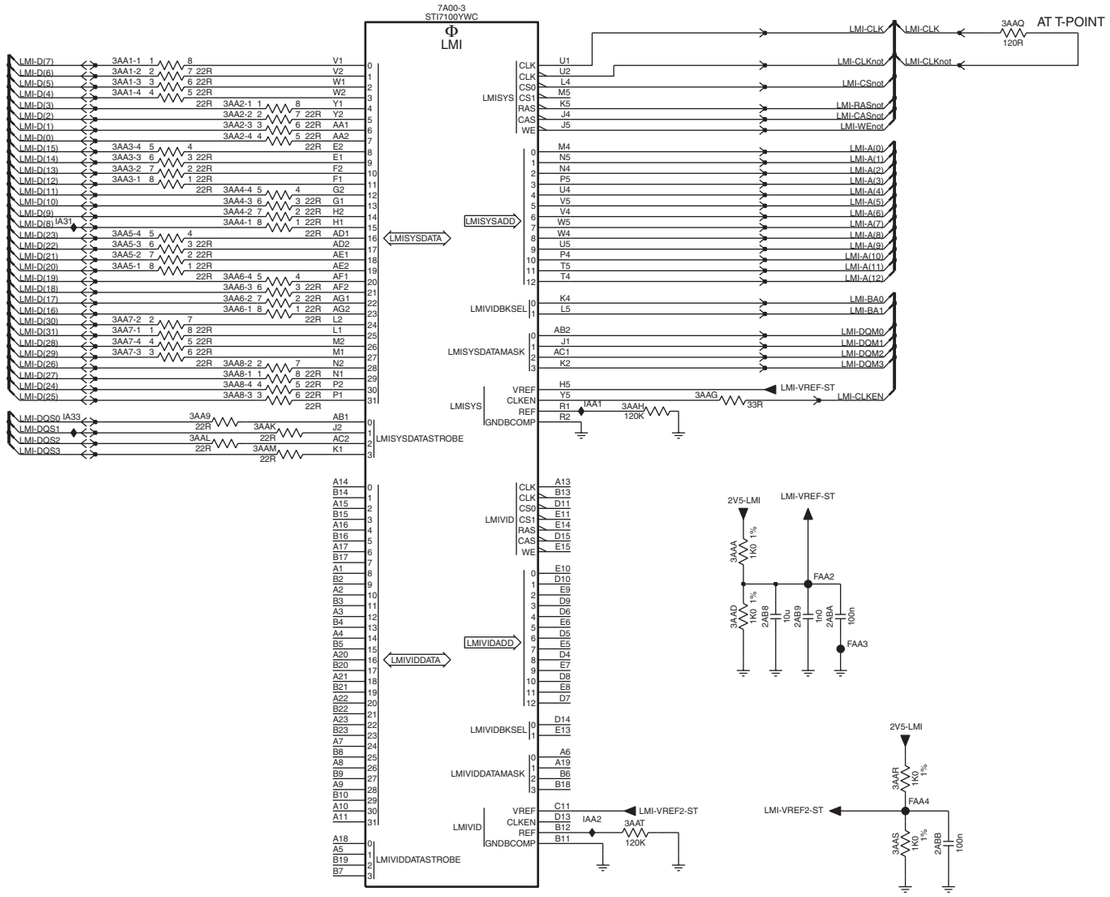
SSB: STi7100: SDRAM

B03C STI7100: SDRAM









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SSB: STi7100: AV-Interface

B03D STI7100: AV-INTERFACE

B03D

7A00-1
STI7100YWC
Φ
AV
INTERFACE

L34 0 L33 1 K34 2 K33 3 J34 4 J33 5 H34 6 H33 7 U30 8 T31 9 T30 10 R31 11 R30 12 P31 13 P30 14 N31 15 — VIDDIGOUTYC

M34 VSYNC, M33 HSYNC — VIDDIGOUT

C28 VBGFIL, C27 IREF — AUDANA

B28 MRIGHT, A28 PRIGHT, B27 MLEFT, A27 PLEFT — AUDANAOUT

D24 SPDIF, E24 SCLK, E26 LRCLK, D26 PCMCLK — AUDOUT

A25 0, B25 1, C25 2, D25 3, E25 4 — AUDPCMOUT

VIDANA: R0OUT D34, G0OUT F34, B0OUT E34

VIDANA: IDUMPR0 D33, IDUMPG0 F33, IDUMPB0 E33

VIDANA: C1OUT A34, CV1OUT C34, Y1OUT B34 — IAC0

VIDANA: IDUMPC1 A33, IDUMPCV1 C33, IDUMPY1 B33

VIDANA: REXT0 A31, REXT1 A32

VIDANA: GNDAREXT0 B31, GNDAREXT1 B32

TMDS: TXCP U33, TXCN U34, TX0P T33, TX0N T34, TX1P R33, TX1N R34, TX2P P33, TX2N P34

TMDSREF T32

AUDDIG: DATAIN D29, DSTRBIN D28, DLRCLKIN E28

IAC2 — 3AC2 12K
IAC3 — 3AC3 22K
IAC3 — 3AC4 12K
3AC5 22K

2AC0 1u0 — IAC4
3AC1 510R 5% — IAC5

SPDIF-IN1 — 3AC0 68R

PCMOUT2
PCMOUT3
PCMOUT4

FAC0 — 3AC9 49R9 1% — +3V3TMDS

3ACA RES 100R 1%
COMPENSATION RESISTOR

MPEG-TXC+ MPEG-TXC- MPEG-TX0+ MPEG-TX0- MPEG-TX1+ MPEG-TX1- MPEG-TX2+ MPEG-TX2-

MPEG-TXC- MPEG-TXC+ MPEG-TX0- MPEG-TX0+ MPEG-TX1- MPEG-TX1+ MPEG-TX2- MPEG-TX2+

1 9AC0-1 8
2 9AC0-2 7
3 9AC0-3 6
4 9AC0-4 5
1 9AC1-1 8
2 9AC1-2 7
3 9AC1-3 6
4 9AC1-4 5

MPEG-DDC-SDAD 6 9AC3-3 3 FAC2
MPEG-DDC-SCLD 5 9AC3-4 4 FAC3

4 9AC2-4 5
2 9AC2-2 7
1 9AC2-1 8

FAC1 1AC1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

FI-RE21S-VF-R1300

1AC1 C8
2AC0 C2
3AC0 D2
3AC1 C1
3AC2 C5
3AC3 C5
3AC4 C5
3AC5 C5
3AC9 D5
3ACA D5
7A00-1 A3
9AC0-1 C7
9AC0-2 C7
9AC0-3 D7
9AC0-4 D7
9AC1-1 D7
9AC1-2 D7
9AC1-3 D7
9AC1-4 D7
9AC2-1 C7
9AC2-2 C7
9AC2-4 C7
9AC3-3 C7
9AC3-4 C7
FAC0 D4
FAC1 C8
FAC2 C7
FAC3 C7
IAC0 B4
IAC2 C4
IAC3 C5
IAC4 C2
IAC5 C2

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SSB: STi7100: Power

B03E STI7100: POWER

B03E

7A00-7 STI7100YWC
POWER (MISC)
USB2
USBVDDBC2V5
USBVDDBS
USBVDDP2V5
USBVDDP
USBVSSC2V5
USBVSSBS
USBVSSP2V5
USBVSSP
SATA-I
SATAVDDT0
SATAVDDT1
SATAVDDR 0
SATAVDDR 1
SATAVDDREF
SATAVDDOSC2V5
SATAVDDOSC
SATAVDDLL
SATAVSST
SATAVSSR
SATAVSSREF
SATAVSSOSC
SATAVSSDLL
TMDS
TMDSVDDC0
TMDSVDDC1
TMDSVDDC2
TMDSVDDCK
TMDSVDDP
TMDSVDDX
TMDSVDDSL
TMDSVDDD
TMDSVDDE3V3
TMDSVDD
TMDSVSSC0
TMDSVSSC1
TMDSVSSC2
TMDSVSSCK
TMDSVSSP
TMDSVSSX
TMDSVSSSL
TMDSVSSD
TMDSGNDE
VDAC
DA_HD_0_VCCA
DA_SD_0_VCCA
VDDE2V5_VID_ANA
DA_HD_0_GNDA
DA_SD_0_GNDA
GNDE_VID_ANA
ADAC
AUD_VCCA
VDDE2V5_AUD_ANA
AUD_GNDA
AUD_GNDAS
GNDE_AUD_ANA
CLOCKGENA
CKGA_PLL1_AVDDPLL2V5
CKGA_PLL1_DVDDPLL1V0
CKGA_PLL2_AVDDPLL2V5
CKGA_PLL2_DVDDPLL1V0
CKGA_PLL_VDDE2V5
CKGA_PLL1_AGNDPLL2V5
CKGA_PLL1_DGNDPLL1V0
CKGA_PLL2_AGNDPLL2V5
CKGA_PLL2_DGNDPLL1V0
CLOCKGENB
CKGB_4FS0_VCCA
CKGB_4FS0_VDDD
CKGB_4FS1_VCCA
CKGB_4FS1_VDDD
VDDE2V5_4FS_ANA
AVDDPLL80v0
DVDDPLL80v0
VDDE2V5_PLL80_ANA
CKGB_4FS0_GNDA
CKGB_4FS0_GNDD
CKGB_4FS1_GNDA
CKGB_4FS1_GNDD
GNDE_4FS_ANA
AGNDPLL80v0
DGNDPLL80v0
GNDE_PLL80_ANA
CLOCKGENC
FS0_VCCA
FS0_VDDD
VDDE2V5_FS0_ANA
FS0_GNDA
FS0_GNDD
GNDE_FS0_ANA
LMI
LMISYSVDDE2V5
LMISYSDLL_VDD
LMIVIDVDDE2V5
LMIVIDDLL_VDD
LMISYSDLL_VSS
LMIVIDDLL_VSS
ANALOG
GND_ANA1
GND_ANA2

7A00-5 STI7100YWC
POWER (1V0)
VDD
GND

7A00-6 STI7100YWC
POWER (2V5, 3V3)
VDDE 2V5
VDDE 3V3
GNDE
GNDE 3V3

+1V cA00 SENSE+1V
IAE6
IAE1
IAE2
IAE3
IAE4
IAE5
IAE8
IAE9
IAE0
+1VTMDS
+3V3TMDS
+2V5-CLKGENA
2V5-LMI
VDDE-3V3
VDDE-2V5
+3V3
+2V5

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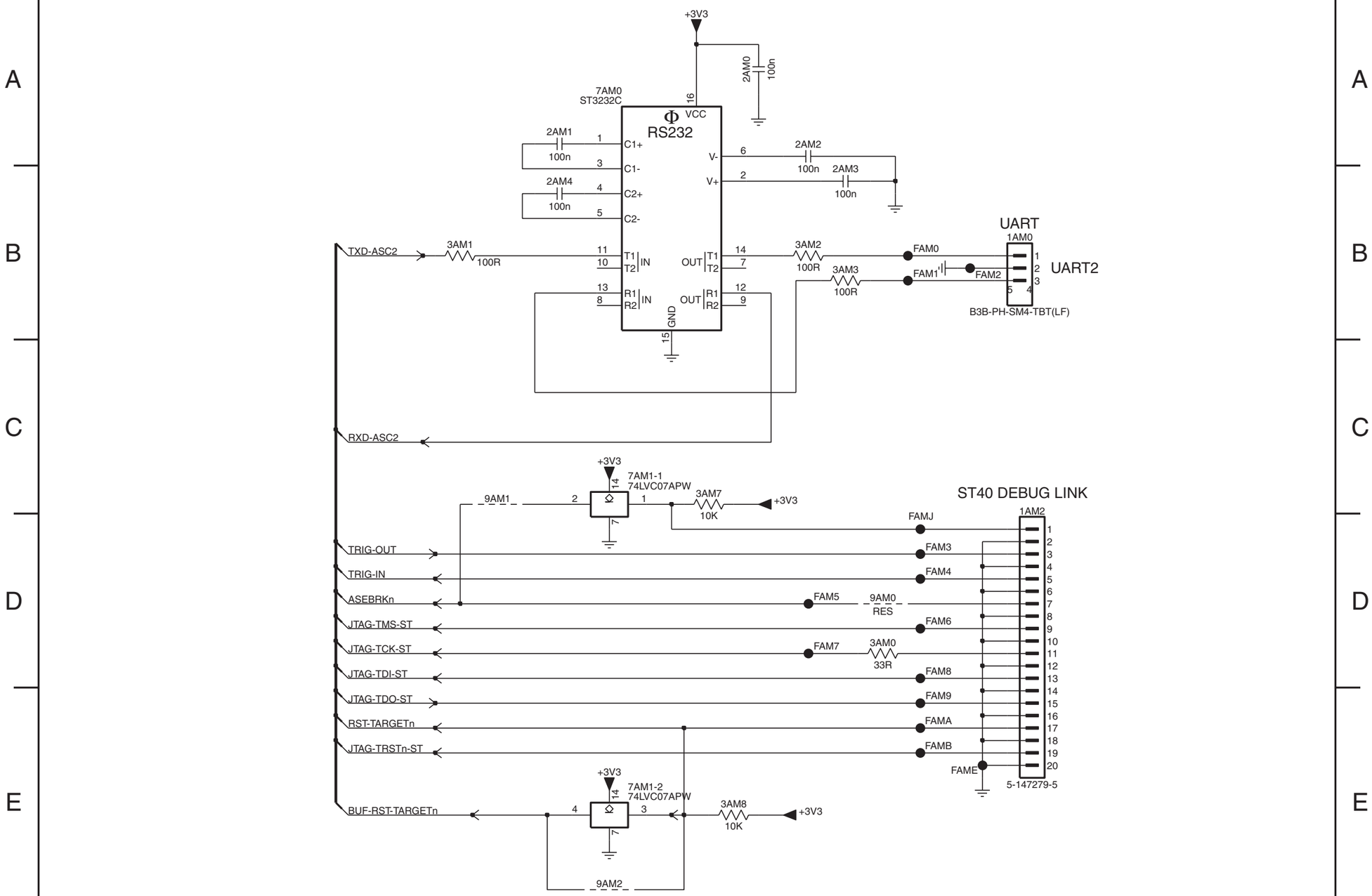
2AE2 D2
2AE5-1 H8
2AE5-2 H9
2AE5-3 H9
2AE5-4 H9
2AE7 D2
2AE8 D1
2AEA H10
2AEB D1
2AEC F12
2AED-1 B1
2AED-2 B1
2AED-3 B1
2AED-4 B2
2AEE B1
2AEH G5
2AEJ-1 B2
2AEJ-2 B2
2AEJ-3 B2
2AEJ-4 B2
2AEM H10
2AEN-1 B3
2AEN-2 B3
2AEN-3 B3
2AEN-4 B3
2AER H11
2AET H9
2AEU H10
2AEZ H10
2AF0 H10
2AF4 E1
2AF5 E1
2AF8 H11
2AFB F12
2AFC F12
2AFD F12
2AFE F13
2AFF F13
2AFG F13
2AFH F13
2AFJ F13
2AFK F14
2AFL H11
2AFN-1 B3
2AFN-2 B4
2AFN-3 B4
2AFN-4 B4
2AFR-1 B5
2AFR-2 B5
2AFR-3 B4
2AFR-4 B5
2AFS H11
2AFT H12
2AG4-1 E1
2AG4-2 E1
2AG4-3 E2
2AG4-4 E2
2AG5 E2
2AG6 E2
2AG7 E2
2AG8 E3
2AG9 E3
2AGA E3
2AGB E3
2AGC F1
2AGD F1
2AGG H5
2AGH H5
2AGN E4
2AGP H11
2AGT G5
5AE0 E12
5AE2 D1
5AE4 E1
5AE5 H4
5AE7 F1
5AE8 D1
5AE9 G4
7A00-5 A10
7A00-6 A13
7A00-7 A7
IAE1 C1
IAE2 D1
IAE3 E1
IAE4 F1
IAE5 E12
IAE6 B2
IAE8 G4
IAE9 G5
cA00 B2

SSB: STi7100: Debug

B03F STI7100: DEBUG

B03F



1AM0 B6
1AM2 D6
2AM0 A4
2AM1 A3
2AM2 A5
2AM3 B5
2AM4 B3
3AM0 D5
3AM1 B3
3AM2 B5
3AM3 B5
3AM7 C4
3AM8 E4
7AM0 A4
7AM1-1 C4
7AM1-2 E4
9AM0 D5
9AM1 C3
9AM2 E4
FAM0 B5
FAM1 B5
FAM2 B6
FAM3 D5
FAM4 D5
FAM5 D5
FAM6 D5
FAM7 D5
FAM8 D5
FAM9 E5
FAMA E5
FAMB E5
FAME E6
FAMJ D5

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SSB: PNX8541: Standby Controller

B04A PNX 8541: STANDBY CONTROLLER

B04A

STANDBY CONTROL

RES

1H11 C13
1HF0 A4
2H00 B3
2H01 D3
2H03 F6
2H06 C14
2H07 D14
2H10 C11
2H11 H7
2H12 H6
2HF0 A3
2HF1 A3
3H00 B11
3H01 B11
3H02 B11
3H03 B11
3H04 B11
3H05 B11
3H06 B11
3H07 C11
3H08 C11
3H10 B2
3H12 E12
3H13 B1
3H14 B2
3H15 B1
3H16 B2
3H17 B1
3H19 B2
3H20 B1
3H21 C2
3H22 E12
3H23 C1
3H24 C2
3H25 E12
3H26 C1
3H27 C2
3H28 C1
3H30 C2
3H31 C1
3H32 A11
3H36 D2
3H37 D4
3H39 B2
3H41 G6
3H42 B1
3H43 H7
3H44 I4
3H45 D2
3H46 C2
3H47 A11
3H48 C1
3H49 A10
3H50 A11
3H51 C2
3H54 C7
3H56 C7
3H58 C2
3H60 D1
3H64 D2
3H65 B7
3H66 B7
3H67 B7
3H68 B7
3H69 B7
3H70 D2
3H72 G7
3H73 G9
3H78-1 E5
3H78-2 E6
3H78-3 H4
3H78-4 H4
3H86-1 F4
3H86-2 F4
3H86-3 F3
3H86-4 F2
3H87-1 H3
3H87-2 H3
3H87-3 H2
3H87-4 H4
3H92-1 G4
3H92-2 G4
3H92-3 F3
3H92-4 G3
6H10 G7
6HW0 G13
6HW1 G13
6HW2 F5
7H00-6 A5
7H02 D10
7H03 E13
7H11 G8
7H14 E6
7H16-1 F5
7H16-2 F5
7H93-1 G5
7H93-2 H5
9H05 F12
9H06 D3
9H13 G8
AHF0 A4
FH00 C13
FH01 D13
FH02 G13
IH00 D10
IH01 D11
IH02 D4
IH03 D10
IH04 F4
IH06 D10
IH07 D10
IH08 H5
IH09 E12
IH10 F12
IH11 F13
IH14 E5
IH16 F5
IH17 G5
IH18 H4
IH19 F4
IH20 E7
IH26 G4
IH33 G7
IH34 G8
IH35 G7
IH91 H4
IH92 E9
IH93 C14
IH94 C14
IH95 D14
IHWZ G13

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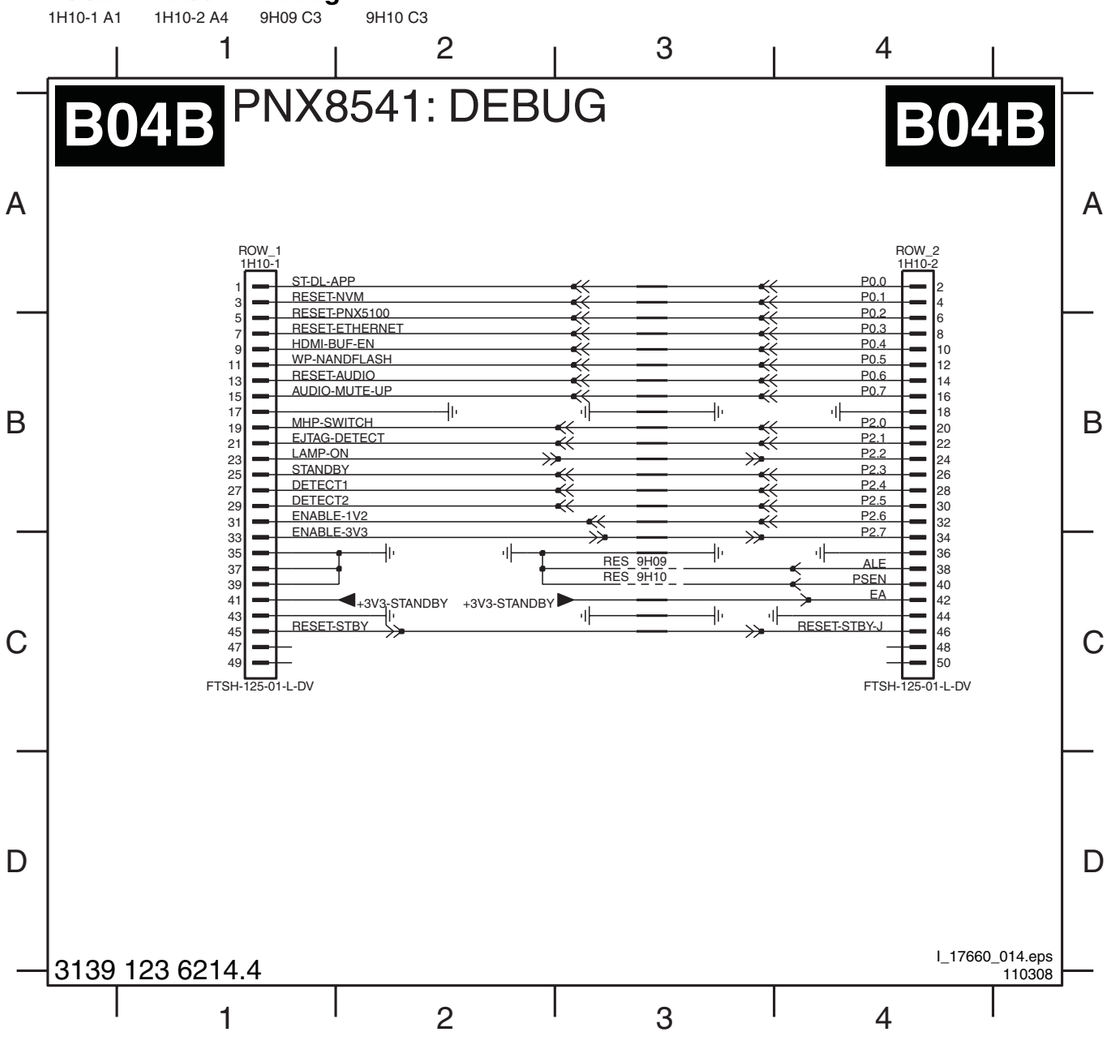
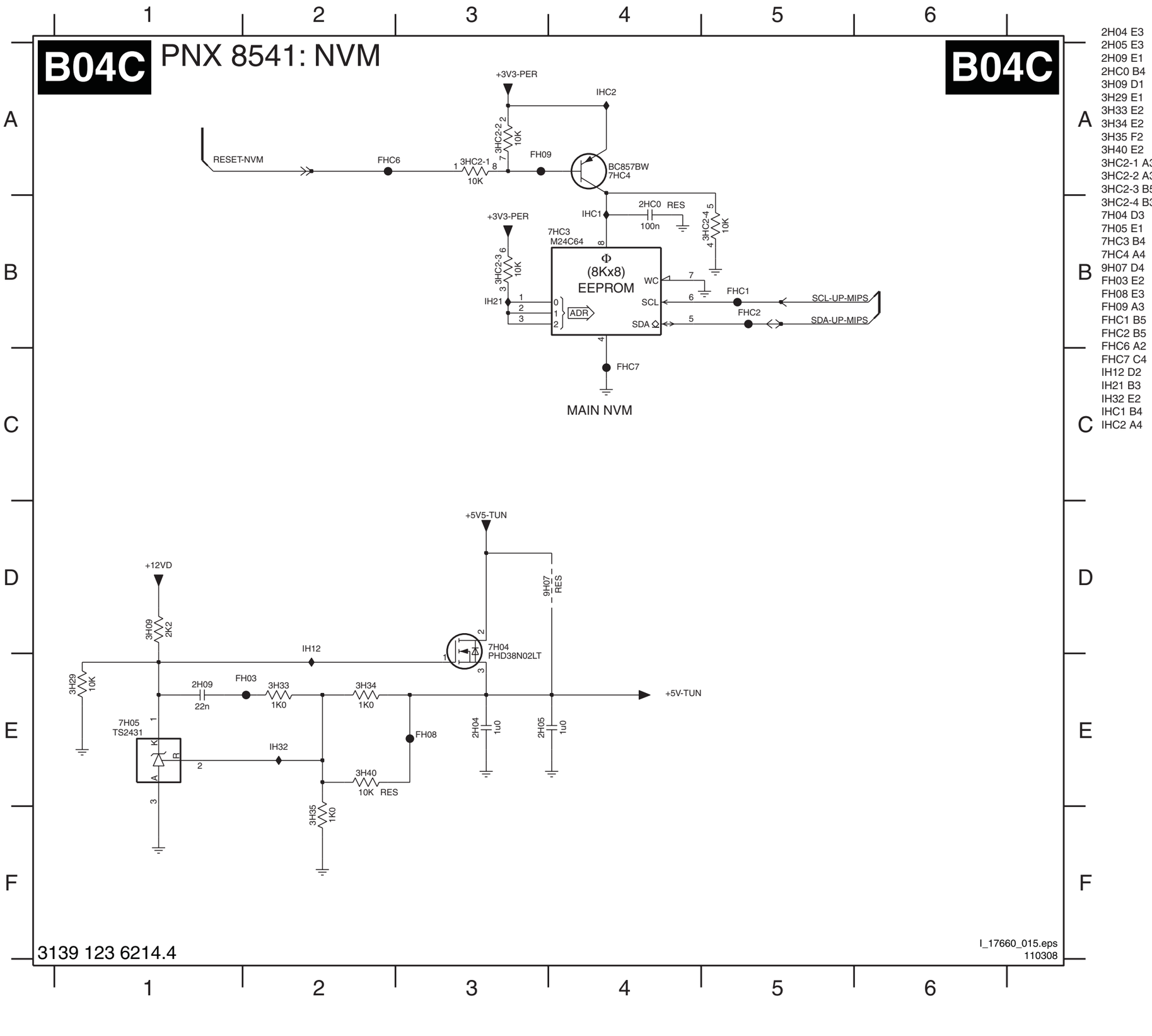
SSB: PNX8541: Debug



Personal Notes:

E_06532_012.eps
131004

SSB: PNX8541: NVM

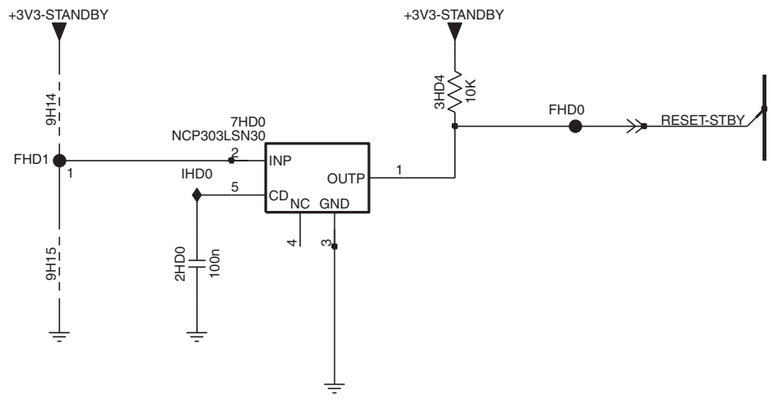


SSB: PNX8541: Misc.

B04D PNX 8541: MISCELLANEOUS

B04D

2HD0 D2
3HD4 C3
7HD0 C2
9H14 C2
9H15 D2
FHD0 C4
FHD1 C2
IHD0 C2



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110308

SSB: PNX8541: Control

B04E PNX8541: CONTROL

B04E

7H00-4
PNX8541

MIPS C0NTROL

EJTAG-TDI AK1 TDI
EJTAG-TCK AJ2 TCK
EJTAG-TMS AK3 TMS
EJTAG-TRSTN AJ3 TRST
EJTAG-TDO AK2 TDO
EJTAG

SCL1 AK27 SCL
SDA1 AH27 SDA
I2C1
SCL2 AK29 SCL
SDA2 AK28 SDA
I2C2
SCL3 AJ28 SCL
SDA3 AJ27 SDA
I2C3

+1V2-PNX8541
9HF8 AE27 VPP_ID

BOOTMODE T1
WC-EEPROM-PNX5100 T2
IRQ-PCI T3
IRQ-CA 9HG1 IHF7 G27
RXD-MIPS E27
TXD-MIPS IHS8 D28
GPIO

2HF2 100n

+3V3-PER 3HP8 10K IRQ-CA

9HG2 RES

BOOTMODE 3HFY 10K +3V3-PER

IRQ-PCI 3H11 10K

RESET_SYS AJ26 RESET-SYSTEM
27MHz_OUT AK26 IHS7 9HG3 PCI-CLK-OUT

+3V3-PER 3HF9 10K
+3V3-PER 3HF3 330R
6HF0 SML-310

RESET-SYSTEM 7HF2 PDTC114EU

PCI-CLK-OUT 3HFG 22R PCI-CLK-ETHERNET
IHF0 3HFH 10R IHF5 PCI-CLK-PNX5100
3HF2 22R PCI-CLK-PNX8535
3HF4 22R PCI-CLK-USB20_ETH

RESERVED

+3V3-PER
2HF5 10n
2HF6 100n

7HF1
CY2305S
6 VDD
Φ ZERO DELAY BUFFER
REF 1
CLK 2 3 4
GND 4
CLKOUT 8

PCI-CLK-OUT 3HFR 33R 1
3 2HF7 10p
2 3HFK 33R PCI-CLK-PNX8535
5 3HFP 33R PCI-CLK-ETHERNET
2HF8 15p
7
8 3HFM 33R PCI-CLK-PNX5100
3HFN 33R PCI-CLK-USB20_ETH

SCL1 3HPD 100R SCL-UP-MIPS
SDA1 3HPE 100R SDA-UP-MIPS
SCL2 3HPF 100R SCL-UP-MIPS
SDA2 3HPG 100R SDA-UP-MIPS
SCL3 3HPH 100R SCL-SSB
SDA3 3HPJ 100R SDA-SSB
SCL-SSB FH04 3HPK 2K2 +3V3-PER
SDA-SSB FH05 3HPM 2K2

2HF2 C1
2HF5 C7
2HF6 D7
2HF7 D8
2HF8 D8
3H11 D2
3HF0 B5
3HF2 C7
3HF3 A7
3HF4 C7
3HF9 A6
3HFG B7
3HFH B6
3HFK D8
3HFM E8
3HFN E8
3HFP D8
3HFR D6
3HFY C2
3HP8 C1
3HPD E1
3HPE E1
3HPF E1
3HPG E1
3HPH E1
3HPJ F1
3HPK E3
3HPM F3
6HF0 A7
7H00-4 A3
7HF1 D7
7HF2 B7
9HF8 B2
9HG1 C2
9HG2 C3
FH04 E3
FH05 F3
IHF0 B6
IHF5 B7
IHF7 C3
IHS7 B4
IHS8 C2

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SSB: PNX8541: Control

B04F PNX 8541: CONTROL

B04F

7H00-5
PNX8541

PCI XIO

XIO-ACK → A11 ACK
B10 AD25

IHF3 E11
IHF2 D11
IHF1 C11
B11
3 2 1 0 XIO SEL

XIO-SEL-NAND → 3HF5 100R

PCI-AD0 A20
PCI-AD1 B20
PCI-AD2 C20
PCI-AD3 D20
PCI-AD4 A19
PCI-AD5 B19
PCI-AD6 C19
PCI-AD7 D19
PCI-AD8 E19
PCI-AD9 A18
PCI-AD10 B18
PCI-AD11 C18
PCI-AD12 D18
PCI-AD13 E18
PCI-AD14 A17
PCI-AD15 B17
PCI-AD16 E15
PCI-AD17 D15
PCI-AD18 C15
PCI-AD19 B15
PCI-AD20 A15
PCI-AD21 E14
PCI-AD22 D14
PCI-AD23 C14
PCI-AD24 B14
PCI-AD25 A14
PCI-AD26 E13
PCI-AD27 D13
PCI-AD28 C13
PCI-AD29 B13
PCI-AD30 A13
PCI-AD31 E12
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 PCI AD

CBE 0 1 2 3: D12 C12 B12 A12 → PCI-CBE0 PCI-CBE1 PCI-CBE2 PCI-CBE3

PCI_CLK A21 → PCI-CLK-PNX8535

PCI CTRL:
DEVSEL A16 → PCI-DEVSEL
FRAME C17 → PCI-FRAME
IRDY D17 → PCI-IRDY
TRDY E17 → PCI-TRDY
STOP B16 → PCI-STOP
IDSEL B21 → 3HEU 100R → PCI-AD24
PAR E16 → PCI-PAR
PERR C16 → PCI-PERR
SERR D16 → PCI-SERR

REQ D21 → PCI-REQ
GNT E21 → PCI-GNT
REQ_B E22 → PCI-REQ-B
GNT_B E20 → PCI-GNT-B

INTA_OUT C21 → IH30

PCI-DEVSEL
PCI-FRAME
PCI-IRDY
PCI-TRDY
PCI-STOP
PCI-PERR
PCI-SERR
3HFD-1 10K 3HFD-3 10K 3HFD-4 10K 3HFD-2 10K 3HFE-3 10K 13HFE-1 10K 3HFE-2 10K → +3V3-PER

PCI-REQ
PCI-GNT
PCI-REQ-B
PCI-GNT-B
2 10K 7 3HES-2 +3V3-PER → 9HF6 PCI-REQ-PNX85XX
1 10K 8 3HES-1 +3V3-PER → 9HF7 PCI-GNT-PNX85XX
3 10K 6 3HES-3 +3V3-PER → 9HF4 PCI-REQ-USB20
4 10K 5 3HES-4 +3V3-PER → 9HF5 PCI-GNT-USB20

3HES-1 C7
3HES-2 C7
3HES-3 C7
3HES-4 C7
3HEU C5
3HF5 B2
3HFD-1 B7
3HFD-2 B8
3HFD-3 B7
3HFD-4 B7
3HFE-1 B7
3HFE-2 B7
3HFE-3 B7
7H00-5 A3
9HF4 C7
9HF5 C7
9HF6 C7
9HF7 C7
IH30 C6
IHF1 B2
IHF2 B2
IHF3 B2

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SSB: PNX8541: SDRAM

B04G PNX 8541: SDRAM

B04G

RESERVED

+1V8-PNX8541

+3V3F

VTT-TERM-DDR

DDR2-VREF-CTRL

DDR2-VREF-DDR

CONTR+1V8-PNX8541

DDR

SDRAM

EDE5116AJBG-6E-E

NCP5208DR2G

PHD38N02LT

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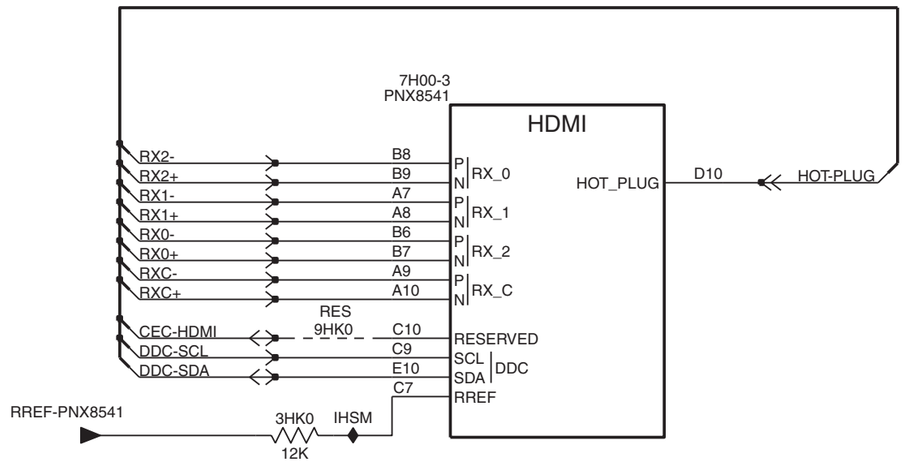
110308

SSB: PNX8541: Digital Video In

B04H PNX 8541: DIGITAL VIDEO IN

B04H

3HK0 C2
7H00-3 B2
9HK0 C2
IHSM C2



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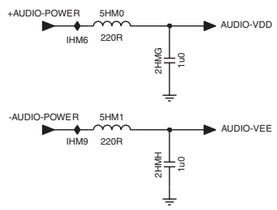
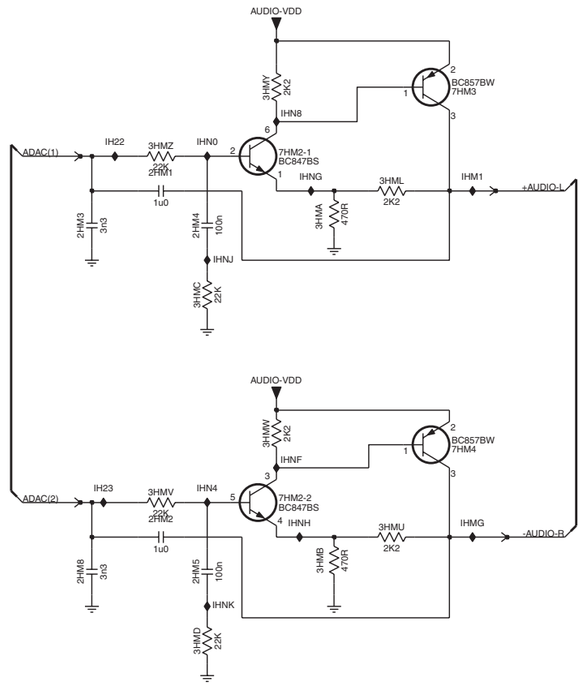
110308

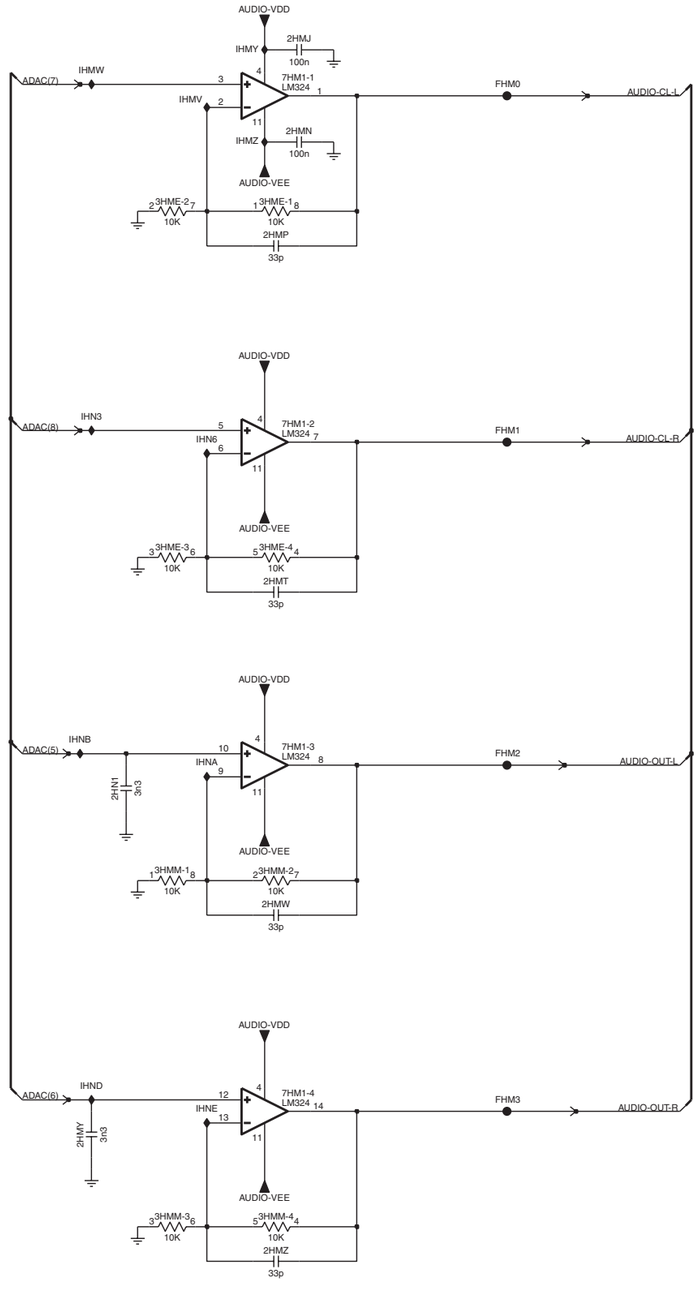
SSB: PNX8541: Audio

B04I PNX 8541: AUDIO

B04I







2HM1 D4
2HM2 F4
2HM3 D4
2HM4 D5
2HM5 F5
2HM8 F4
2HMG D2
2HMH D2
2HMJ A10
2HMN B10
2HMP C9
2HMT E9
2HMW G9
2HMY H8
2HMZ I9
2HN1 F9
3HMA D5
3HMB F5
3HMC D5
3HMD F5
3HME-1 B9
3HME-2 B9
3HME-3 E9
3HME-4 E9
3HML D6
3HMM-1 G9
3HMM-2 G9
3HMM-3 I9
3HMM-4 I9
3HMU F6
3HMV E4
3HMW E5
3HMY C5
3HMZ C4
5HM0 D2
5HM1 D2
7HM1-1 B10
7HM1-2 D10
7HM1-3 F10
7HM1-4 H10
7HM2-1 C5
7HM2-2 F5
7HM3 C6
7HM4 E6
FHM0 B11
FHM1 D11
FHM2 F11
FHM3 H11
IH22 C4
IH23 E4
IHM1 C6
IHM6 D1
IHM9 D1
IHMG F6
IHMV B9
IHMW B8
IHMY A9
IHMZ B9
IHN0 C5
IHN3 D8
IHN4 E5
IHN6 D9
IHN8 C5
IHNA F9
IHNB F8
IHND H8
IHNE H9
IHNF E5
IHNG C5
IHNH F5
IHNJ D5
IHNK F5

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SSB: PNX8541: Analogue AV

B04K PNX 8541: ANALOGUE AV

B04K

7H00-9
PNX8541

VIDEO ANALOGUE

R5 VSYNC_OUT

AI10 F1 2HA2 22n
AI11 F2
AI12 G1
AI13 G2
AI14 G3
REF1 G4 2HTH IHSA 22n 2HU5 22n IHS4
AI20 H1 2HA3 22n
AI21 H2
AI22 J1
AI23 J2
AI24 J3
REF2 J4 2HT7 22n
AI30 K1 2HA4 22n
AI31 K2
AI32 K3
AI33 K4
AI34 L1 2HT3 22n IHRA
REF3 L2 2HT5 22n IHSC
AI40 P4 2HA5 22n
AI41 P5
AI42 R1
AI43 R2
AI44 R3
REF4 R4 2HT6 IHSD 22n 2HU8 22n IHS5
AI50 M1
AI51 M2
AI52 M3 IHV3 2HUN 22n
AI53 M4 2HTK 22n 2HUP 22n
AI54 M5
REF5 N1 IHV6 2HST 22n
AI60 N2 2HSV 22n
AI61 N3 IHVE 2HSW 22n RES 2HS0 22n IHRB
AI62 N4
AI63 P1
AI64 P2
REF6 P3 2HSY IHSH 22n

CVBS1_Y IP B3 IHSB 3HS6 75R 2HUK 270p
CVBS2_C IP B2 IHSC 3HS7 75R 2HKL 270p 75R 3HSW IHS3
HSYNC_IN F3
VSYNC_IN T4
AGC A1
3V3_VIDEO_OUT D4
VDAC_BIAS C3 IHSG 4K7 3HS5 FHR4 2HT2 100n 2HT4 10u 5HR7 30R +3V3-PER
VDDA_3V3_AOUT L4
VDDA_3V3_UA K5 4K7 3HT9
FHR3 2HSZ 100n 2HT0 22n 2HT1 10u 5HR6 30R +3V3-PER

2HS4 22n IHR1 3HRT 47R 3HRS 27R AV1-Y_CVBS
2HRZ 22n IHPF 5HRC 330n 3HSH 27R 3HSJ 47R 2HTP 100p 2HTR 100p AV1-PR
2HS7 22n FHR1 5HR2 330n 3HRU 27R 3HRV 47R 2HS8 100p 2HS9 100p AV1-Y
2HS1 22n IHR0 5HR0 330n 3HRR 27R 3HRP 47R 2HS5 100p 2HS3 100p AV1-PB
2HSA 22n IHRC 5HRG 330n 3HSM 27R 3HSN 47R 2HTU 100p 2HTV 100p AV3-PR
2HSC 22n IHR3 5HR3 330n 3HRW 27R 3HRY 47R 2HSD 100p 2HSE 100p AV3-PB
2HSJ 22n IHR5 5HR5 330n 3HS1 27R 3HS2 47R 2HSK 100p 2HSM 100p AV3-Y
2HSF 22n IHR4 3HS0 47R 3HRZ 27R AV2-Y_CVBS
2HSB 22n IHRD 3HSP 27R 3HSQ 47R AV2-C
2HT8 22n IHR6 3HS8 47R 3HS9 27R FRONT-Y_CVBS
2HSP 22n IHRF 3HSV 47R 3HST 27R FRONT-C
2HSN 22n IHRE 5HRL 120n 3HSR 27R 3HSU 47R 2HTZ 100p 2HU0 100p R-VGA
2HTB 22n FHR2 5HR9 120n 3HSB 27R 3HS4 47R 2HTC 100p 2HTD 100p G-VGA
2HTE 22n IHR8 5HRA 120n 3HSE 27R 3HSD 47R 2HTF 100p 2HTG 100p B-VGA
2HUB 22n IHS6 3HT4 27R CVBS4 3HT3 47R
3HS3 390R 2HSR 100n IF-N
2HSU 12p
3HS4 390R 2HSS 100n IF-P
IHS2 Y_CVBS-MON-OUT 2HSF 75R 2HTL 270p
FHR5 H-SYNC-VGA
FHR6 V-SYNC-VGA

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2HA2 C3
2HA3 C3
2HA4 D3
2HA5 D3
2HKL F3
2HRZ A7
2HS0 E4
2HS1 B7
2HS2 B7
2HS3 B8
2HS4 A9
2HS7 A7
2HS8 B7
2HS9 B8
2HSA B9
2HSB E7
2HSC C9
2HSD C9
2HSE C10
2HSF D9
2HSJ D7
2HSK D7
2HSM D8
2HSN F7
2HSP F8
2HSR H8
2HSS I8
2HST E3
2HSU H8
2HSV E3
2HSW E3
2HSY F2
2HSZ G3
2HT0 G3
2HT1 G4
2HT2 G3
2HT3 D3
2HT4 G4
2HT5 D2
2HT6 E2
2HT7 D3
2HT8 E7
2HTB G8
2HTC G9
2HTD G9
2HTE G10
2HTF G10
2HTG G11
2HTH C2
2HTK E3
2HTL I9
2HTP A7
2HTR A8
2HTU C9
2HTV C10
2HTZ F8
2HU0 F8
2HU5 C3
2HU8 E3
2HUB H10
2HUK F3
2HUN E3
2HUP E3
3HRP B7
3HRR B8
3HRS A10
3HRT A9
3HRU A8
3HRV B7
3HRW C10
3HRY C9
3HRZ D10
3HS0 D9
3HS1 D8
3HS2 D7
3HS3 H8
3HS4 I8
3HS5 G3
3HS6 F3
3HS7 F3
3HS8 E7
3HS9 E10
3HSA G8
3HSB G9
3HSD G10
3HSE G11
3HSF I8
3HSH A8
3HSJ A7
3HSM B10
3HSN C9
3HSP E8
3HSQ E7
3HSR F9
3HST F10
3HSU F7
3HSV F9
3HSW F4
3HT3 H10
3HT4 H11
3HT9 G3
5HR0 B7
5HR2 A7
5HR3 C9
5HR5 D7
5HR6 G4
5HR7 G4
5HR9 G9
5HRA G10
5HRC A7
5HRG B9
5HRL F8
7H00-9 B1
FHR1 A7
FHR2 F9
FHR3 G3
FHR4 G3
FHR5 I8
FHR6 I8
IHPF A7
IHR0 B7
IHR1 A9
IHR3 C9
IHR4 D9
IHR5 D7
IHR6 E7
IHR8 G10
IHRA D3
IHRB E5
IHRC B9
IHRD D7
IHRE F8
IHRF F9
IHS2 I8
IHS3 F4
IHS4 C4
IHS5 E3
IHS6 H10
IHSA C2
IHSB F2
IHSC D2
IHSD E2
IHSE F2
IHSG G2
IHSH F2
IHV3 E3
IHV6 E3
IHVE E3

SSB: PNX8541: Audio

B04L PNX 8541: AUDIO

B04L

AUDIO-IN1-R
AUDIO-IN1-L
AUDIO-IN2-R
AUDIO-IN2-L
AUDIO-IN3-R
AUDIO-IN3-L
AUDIO-IN4-R
AUDIO-IN4-L
AUDIO-IN5-R
AUDIO-IN5-L

9H11
9H12

3HR0 33K
3HR0-2 33K
3HR0-3 33K
3HR0-4 33K
3HR3-1 33K
3HR3-2 33K
3HR3-3 33K
3HR3-4 33K
3HR8-1 33K
3HR8-2 33K
3HR8-3 33K
3HR8-4 33K
3HRC-1 33K
3HRC-2 33K
3HRC-3 33K
3HRC-4 33K
3HRJ-1 33K
3HRJ-2 33K
3HRJ-3 33K
3HRJ-4 33K

IHRJ IHRH IHS1 IHS0 IHRZ IHRY IHRW IHRV IHRU IHRT

2HR0 2HR1 2HR2 2HR3 2HR4 2HR5 2HR6 2HR7 2HR8 2HR9 2HRA 2HRB 2HRC 2HRD 2HRE 2HRF 2HRG 2HRH 2HRJ 2HRK
RES 33p 1u0

7H00-1
PNX8541

AUDIO

AK6	R	AIN1	
AJ6	L		
AG5	R	AIN2	
AF5	L		
AJ5	R	AIN3	
AH5	L		
AH4	R	AIN4	
AK5	L		
AK4	R	AIN5	
AJ4	L		
AG6	R	AADC	
AF6	L		
AH8	POS	VREF	
AH7	NEG		
AJ7	POS	AADC1_VR	
AK7	NEG		
AH6		VCOM_ADC1	
L5		AOUT1	
L3		RES_REF	
M6		GND1	
AK15		SPDIF_IN	

IHSU IHSV IHRK IHRM IHRL

5HRZ 30R
2HRM 2HRN 2HRU 2HRV 2HRP 2HRW 2HRY 100n 10u
3HRK 75R 3HRM 4K7 3HRN 4K7

SPDIF-IN1

AG12	ADAC1	P	
AK13		N	
AH12	ADAC2	P	
AJ12		N	
AK11	ADAC3	P	
AJ11		N	
AF10	ADAC4	P	
AG10		N	
AG9	ADAC5	P	
AK10		N	
AH9	ADAC6	P	
AJ9		N	
AE10	VSSA_AUDIO_DAC1		
AF11	3V3A_AUDIO_DAC1		
AG7	DAC_CAP	R	
AG8		L	
AJ13	ADAC	1	
AK12		2	
AH11		3	
AH10		4	
AJ10		5	
AK9		6	
AK8		7	
AJ8		8	
AJ15	SPDIF_OUT		
AF14	OSCLK		
AJ14	SCK		
AK14	WS		
AH14	SD	1	
AG14		2	

2HP8 100n 2HP7 100n 2HP6 100n 2HP5 100n

IHSW 5HP2 30R FHPE

VDDA-AUDIO

7HP0
LD2985BM33R
OUT IN BP INH COM
2HP4 10u 2HPB 10n 2HPA 10u
IH13 +5V
IHSY 3HAH 22K 3HAG 22K +3V3

3HT8-1 3HT8-2 3HT8-3 3HT8-4 33R
3HP5-1 3HP5-2 3HP5-3 3HP5-4 33R
3HP0 3HP1 RES 33R
IHPD 3HPN 68R

ADAC(1) ADAC(2) ADAC(3) ADAC(4) ADAC(5) ADAC(6) ADAC(7) ADAC(8)
2HRS 3n3 2HRT 3n3

SPDIF-OUT

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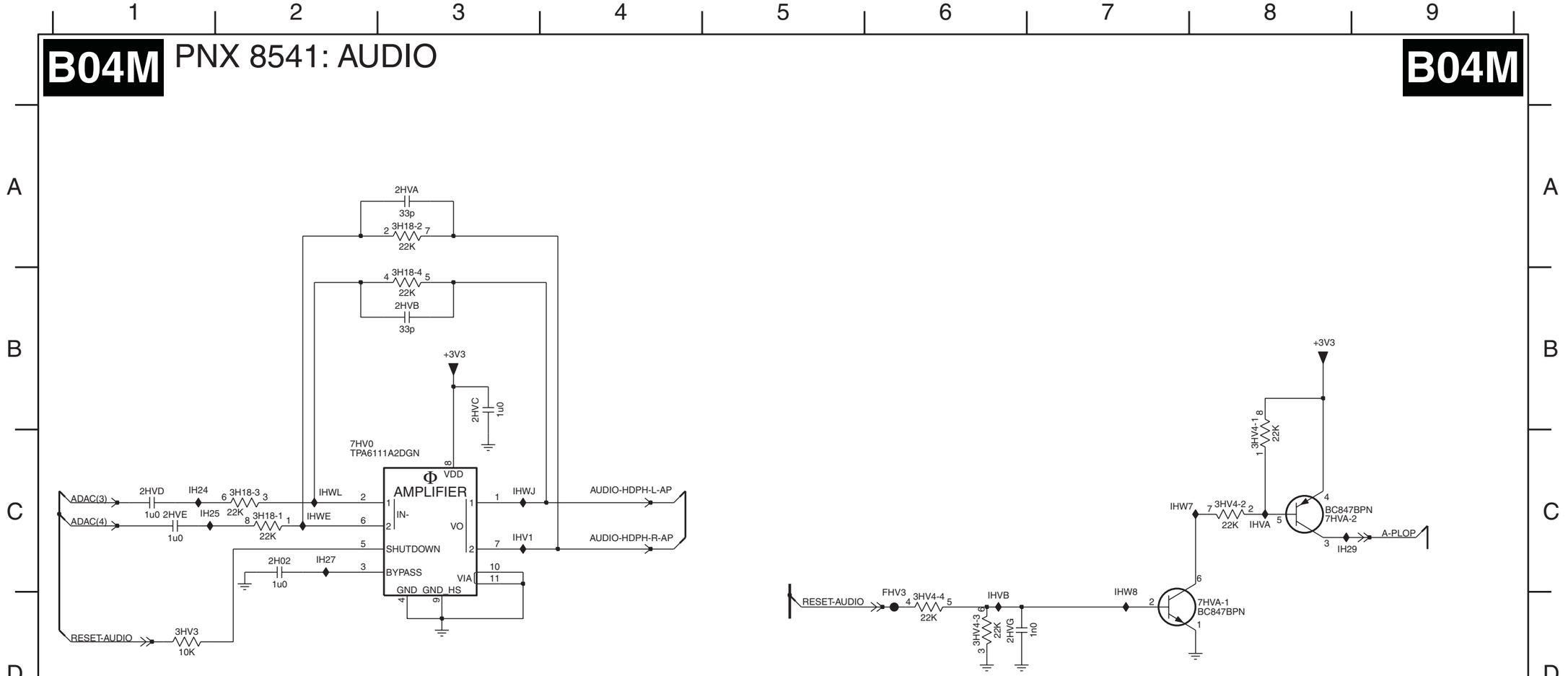
2HP4 E9
2HP5 E8
2HP6 E8
2HP7 E8
2HP8 E7
2HPA E10
2HPB E9
2HR0 C4
2HR1 C5
2HR2 C4
2HR3 C5
2HR4 C4
2HR5 C5
2HR6 D4
2HR7 D5
2HR8 D4
2HR9 D4
2HRA D4
2HRB D4
2HRC D4
2HRD D4
2HRE D4
2HRF D4
2HRG E3
2HRH E4
2HRJ E4
2HRK E4
2HRM F3
2HRN F3
2HRP F4
2HRS F9
2HRT F9
2HRU F3
2HRV F3
2HRW G4
2HRY G4
3HAG E10
3HAH E10
3HP0 F7
3HP1 F8
3HP5-1 F8
3HP5-2 F7
3HP5-3 F8
3HP5-4 F7
3HPN F8
3HR0-1 C3
3HR0-2 C4
3HR0-3 C4
3HR0-4 C3
3HR3-1 C3
3HR3-2 C4
3HR3-3 D4
3HR3-4 D3
3HR8-1 D3
3HR8-2 D4
3HR8-3 D3
3HR8-4 D3
3HRC-1 D3
3HRC-2 D3
3HRC-3 D3
3HRC-4 E2
3HRJ-1 E3
3HRJ-2 E3
3HRJ-3 E3
3HRJ-4 E3
3HRK G4
3HRM G4
3HRN G5
3HT8-1 E8
3HT8-2 F8
3HT8-3 F7
3HT8-4 F8
5HP2 D8
5HRZ E3
7H00-1 D6
7HP0 D9
9H11 B4
9H12 C4
FHPE D9
IH13 D10
IHPD F8
IHRH C4
IHRJ C4
IHRK F4
IHRL F4
IHRM F4
IHRT E3
IHRU E3
IHRV D3
IHRW D3
IHRY D3
IHRZ D3
IHS0 D4
IHS1 C4
IHSU E5
IHSV E4
IHSW D8
IHSY E10

SSB: PNX8541: Audio

B04M PNX 8541: AUDIO

B04M

2H02 C2
2HVA A3
2HVB B3
2HVC B3
2HVD C1
2HVE C1
2HVG D6
3H18-1 C2
3H18-2 A3
3H18-3 C2
3H18-4 B3
3HV3 D1
3HV4-1 C8
3HV4-2 C8
3HV4-3 D6
3HV4-4 D6
7HV0 C2
7HVA-1 D8
7HVA-2 C8
FHV3 D6
IH24 C1
IH25 C1
IH27 C2
IH29 C8
IHV1 C3
IHVA C8
IHVB D6
IHW7 C7
IHW8 C7
IHWE C2
IHWJ C3
IHWL C2



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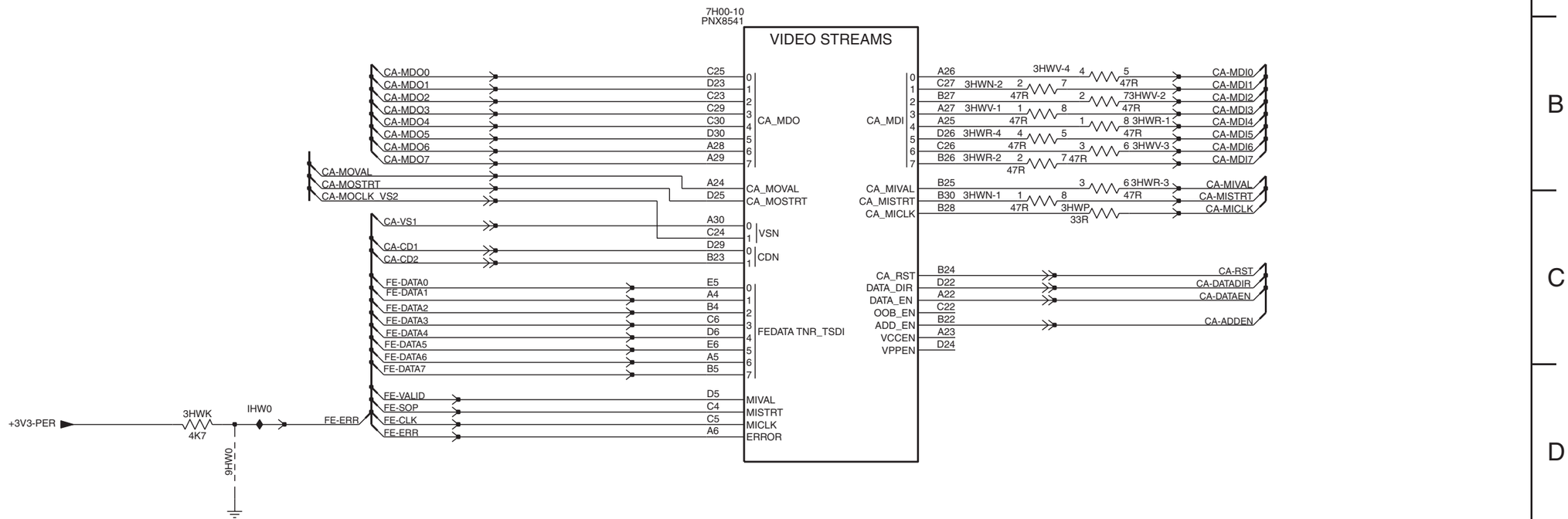
SSB: PNX8541: Video Streams

B04N PNX 8541: VIDEO STREAMS

B04N

3HWK D2
3HWN-1 C6
3HWN-2 B6
3HWP C7
3HWR-1 B7
3HWR-2 B6
3HWR-3 B7
3HWR-4 B6
3HWV-1 B6
3HWV-2 B7
3HWV-3 B7
3HWV-4 B7
7H00-10 A5
9HW0 D2
IHW0 D2



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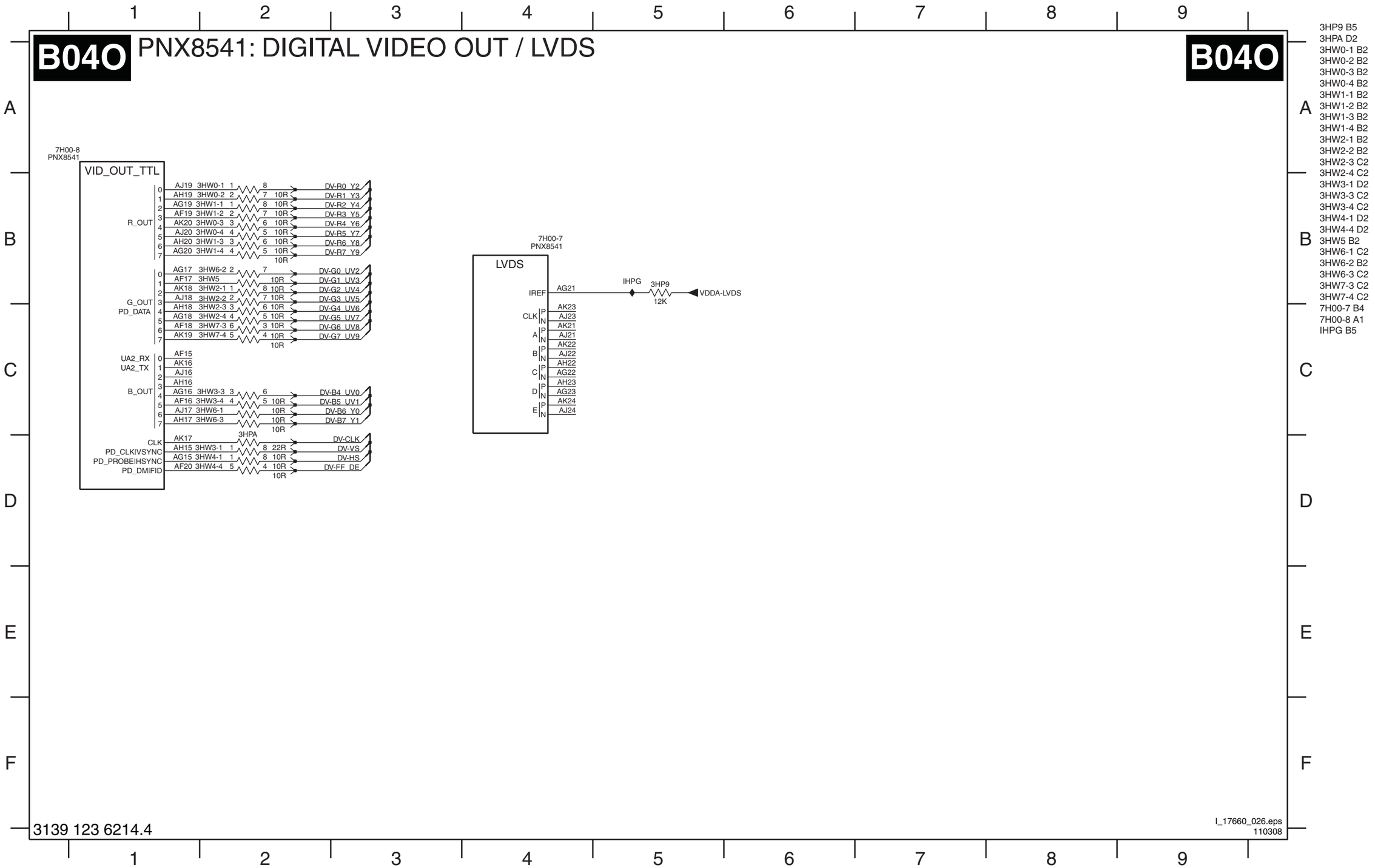
SSB: PNX8541: Digital Video Out / LVDS



SSB: PNX8541: Power

B04P PNX 8541: POWER

B04P

7H00-11 PNX8541 VDD

1V2A AUDIO ADC · 3V3A AUDIO · 1V2A VIDEO ADC · 1V2A DDR · 1V8 DDR · 3V3A DDR · 1V2A HDMI · 3V3A HDMI · 3V3 HDMI · 3V3 LVDS · 3V3A LVDS · 3V3A LVDS PLL · 1V2A CAB · 3V3A 1.7 MCAB

1V2 CORE · 1V2 SB CORE · 3V3 PER · 3V3 SB PER · NC

7H00-12 PNX8541 VSS

VSST11 · VSS · VSSA DDR DLL · VSSA VIDEO · VSSA AUDIO

CHY1 SENSE+1V2-PNX8541

+1V2-STANDBY · +3V3-STANDBY · +3V3-PER · +3V3 · +1V8-PNX8541

VDDA-ADC · VDDA-DAC · VDDA-LVDS · VDDA-AUDIO

RREF-PNX8541

IH28

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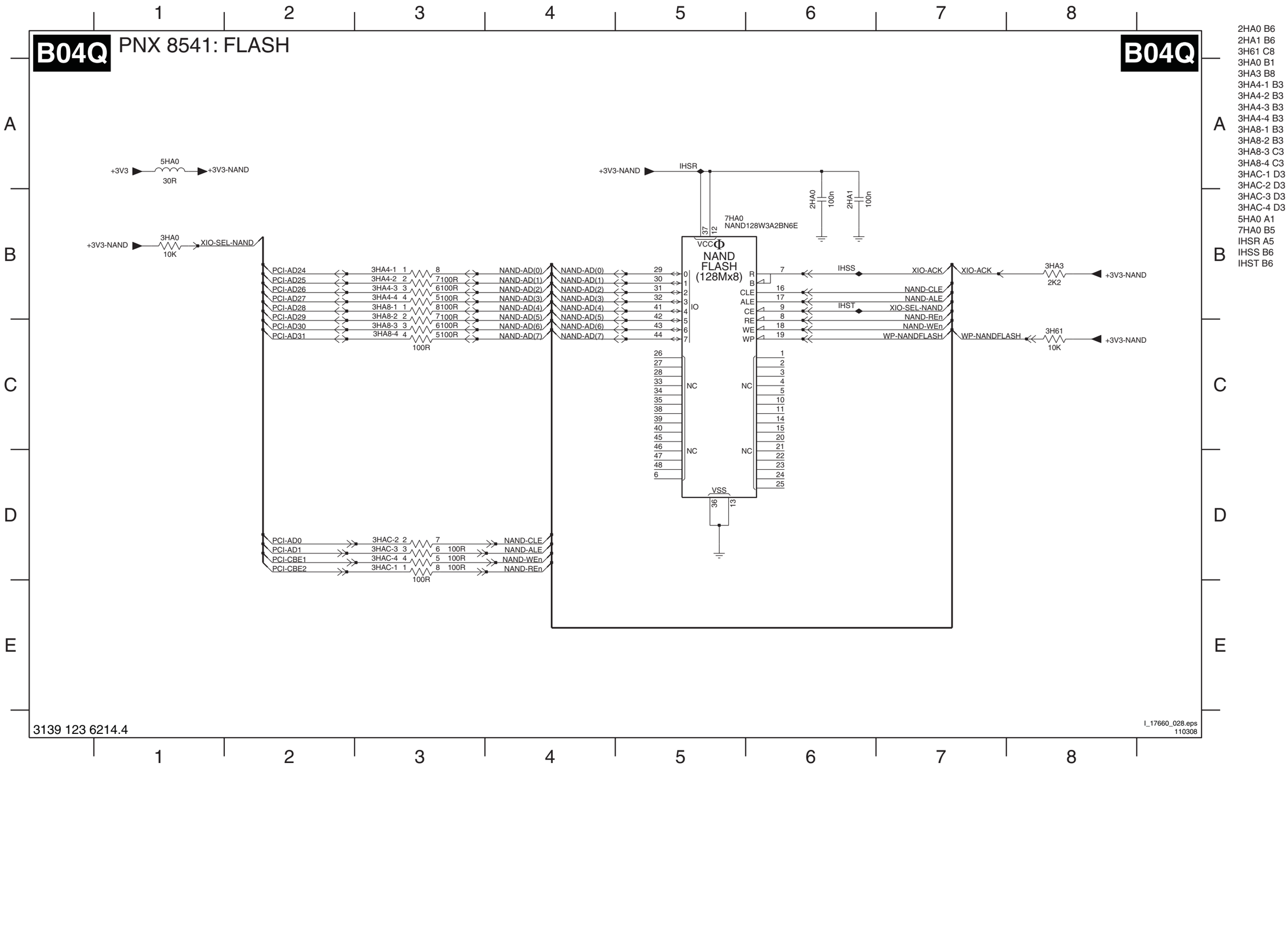
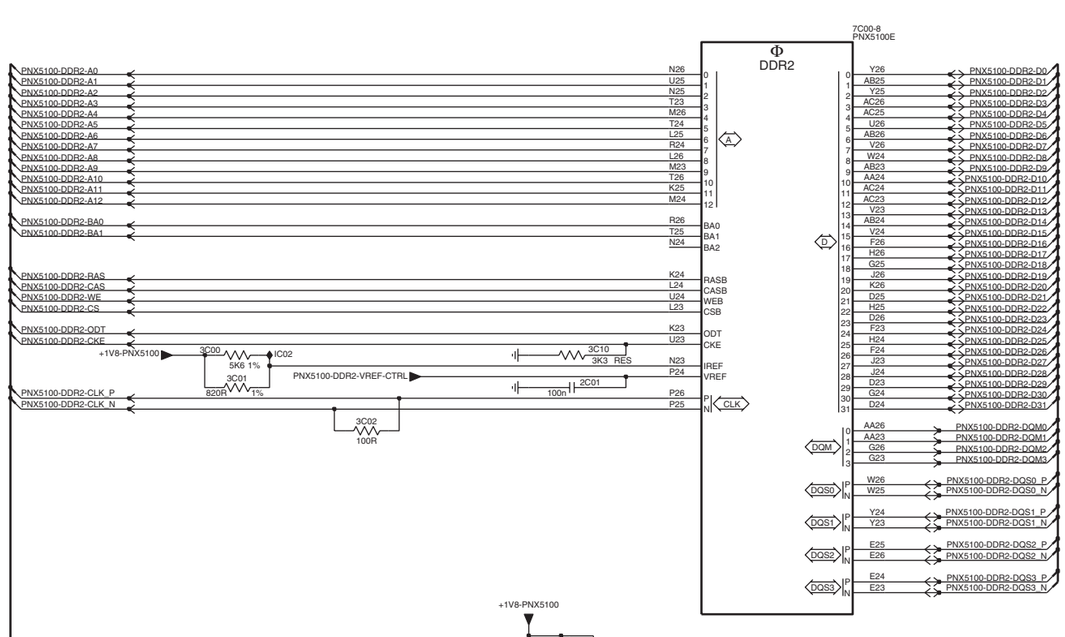
SSB: PNX8541: Flash



SSB: PNX5100: SDRAM

B05A PNX5100: SDRAM

B05A



1C00 D9
2C00 E4
2C01 D4
2C02 E4
2C13 F5
2C14 F5
2C15 F5
2C16 F5
2C17 F5
2C18 F6
2C19 F6
2C29 E10
2C30 E10
2C32 F11
2C33 F11
2C34 F12
2C35 F12
2C36 F12
2C38 F12
2C39 I12
2C40 I6
2C41-1 F1
2C41-2 F1
2C41-3 F2
2C41-4 F2
2C42-1 F2
2C42-2 F2
2C42-3 F2
2C42-4 F3
2C43-1 F8
2C43-2 F8
2C43-3 F8
2C43-4 F8
2C44-1 F9
2C44-2 F9
2C44-3 F9
2C44-4 F9
3C00 C2
3C01 C2
3C02 D3
3C03 H2
3C04 H9
3C05-1 G6
3C05-2 G6
3C05-3 H5
3C05-4 H5
3C06-1 G5
3C06-2 H5
3C06-3 H2
3C06-4 I2
3C07-1 G6
3C07-2 G5
3C07-3 G5
3C07-4 H6
3C08-1 H5
3C08-2 H5
3C08-3 H6
3C09-1 H6
3C09-2 H5
3C09-3 H5
3C09-4 H6
3C10 C4
3C11 H6
3C12 I2
3C13 I2
3C20 B10
3C21 B10
3C22 B12
3C23 B12
3C25-1 G12
3C25-2 G12
3C25-3 H12
3C25-4 H12
3C26-1 G12
3C26-2 G11
3C26-3 G11
3C26-4 H12
3C27-1 G11
3C27-2 H11
3C27-3 H9
3C27-4 I8
3C28-1 H12
3C28-2 H11
3C28-3 H11
3C28-4 H12
3C30-1 H11
3C30-2 H11
3C30-3 I8
3C30-4 I9
3C31 H12
3C32 H12
7C00-8 A6
7C01 F3
7C02 F9
FC05 B11
FC06 B9
IC02 C2

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SSB: PNX5100: Video

B05B PNX5100: VIDEO

B05B

3C50 B5
3C51 B5
7C00-5 B2
7C00-9 B6
IC54 B5

7C00-5
PNX5100E

Φ
LVDS_RX

AE17	AP	LIN1
AF17	AN	
AC17	BP	
AD17	BN	
AC16	CLKP	
AD16	CLKN	
AE16	CP	
AF16	CN	
AE15	DP	
AF15	DN	
AC15	EP	
AD15	EN	
AE20	AP	LIN2
AF20	AN	
AC20	BP	
AD20	BN	
AC19	CLKP	
AD19	CLKN	
AE19	CP	
AF19	CN	
AE18	DP	
AF18	DN	
AC18	EP	
AD18	EN	

7C00-9
PNX5100E

Φ
VDI

IC54

DV-CLK	D6	1
DV-FF_DE	A4	2
+3V3 — 3C50 1K0	E2	3 CLK
3C51 1K0	G4	4
	G3	0
	G2	1
	G1	2
	F4	3
	F3	4
	F2	5
	F1	6
	E3	7
	E1	8
	D2	9
DV-B4_UV0	D1	10
DV-B5_UV1	C1	11
DV-G0_UV2	A2	12
DV-G1_UV3	A3	13
DV-G2_UV4	B3	14
DV-G3_UV5	B4	15

16	C4	DV-G4_UV6
17	A5	DV-G5_UV7
18	B5	DV-G6_UV8
19	C5	DV-G7_UV9
20	D5	DV-B6_Y0
21	A6	DV-B7_Y1
22	B6	DV-R0_Y2
23	C6	DV-R1_Y3
24	A7	DV-R2_Y4
25	B7	DV-R3_Y5
26	C7	DV-R4_Y6
27	D7	DV-R5_Y7
28	A8	DV-R6_Y8
29	B8	DV-R7_Y9
30	C8	DV-VS
31	D8	DV-HS

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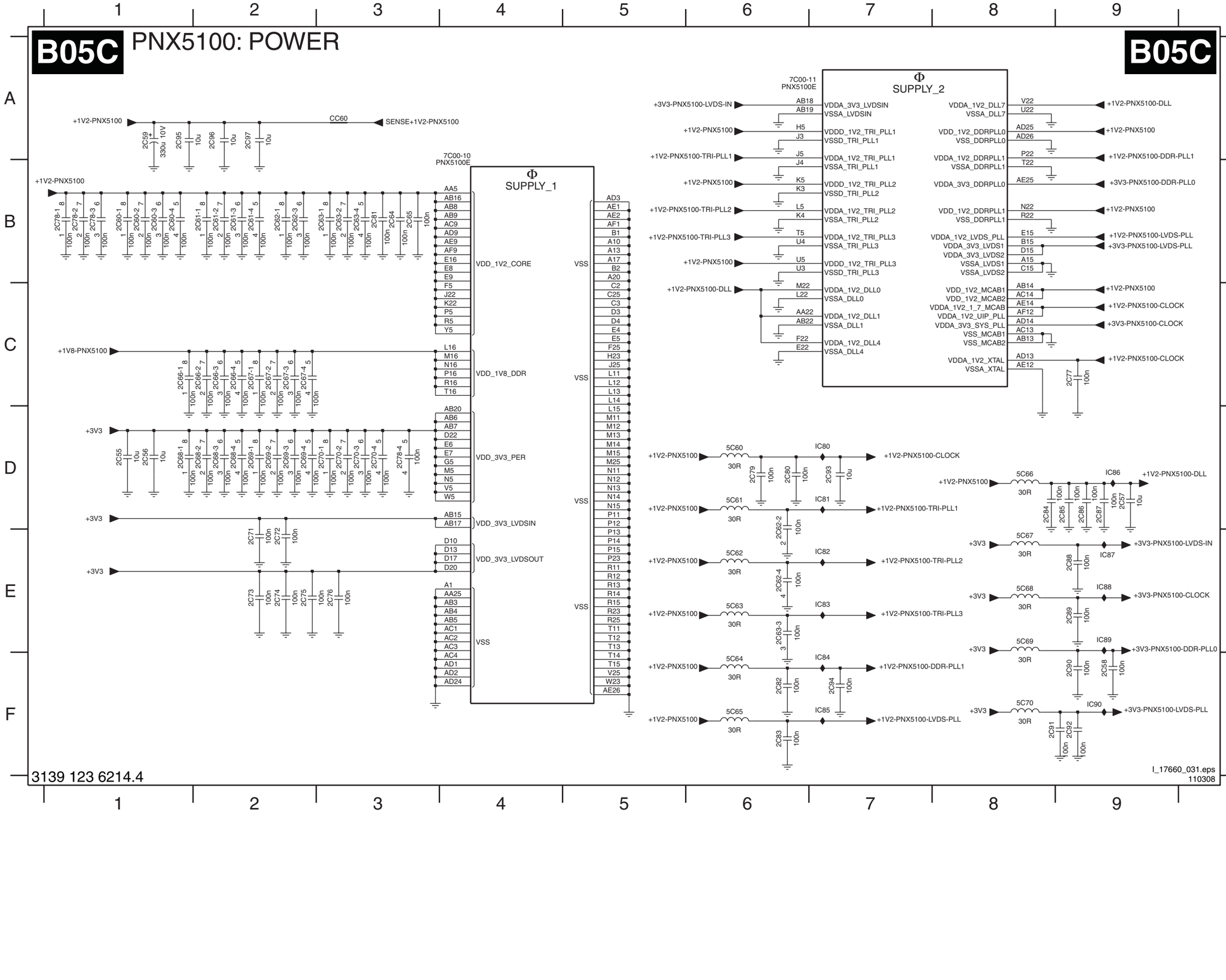
SSB: PNX5100: Power

B05C PNX5100: POWER



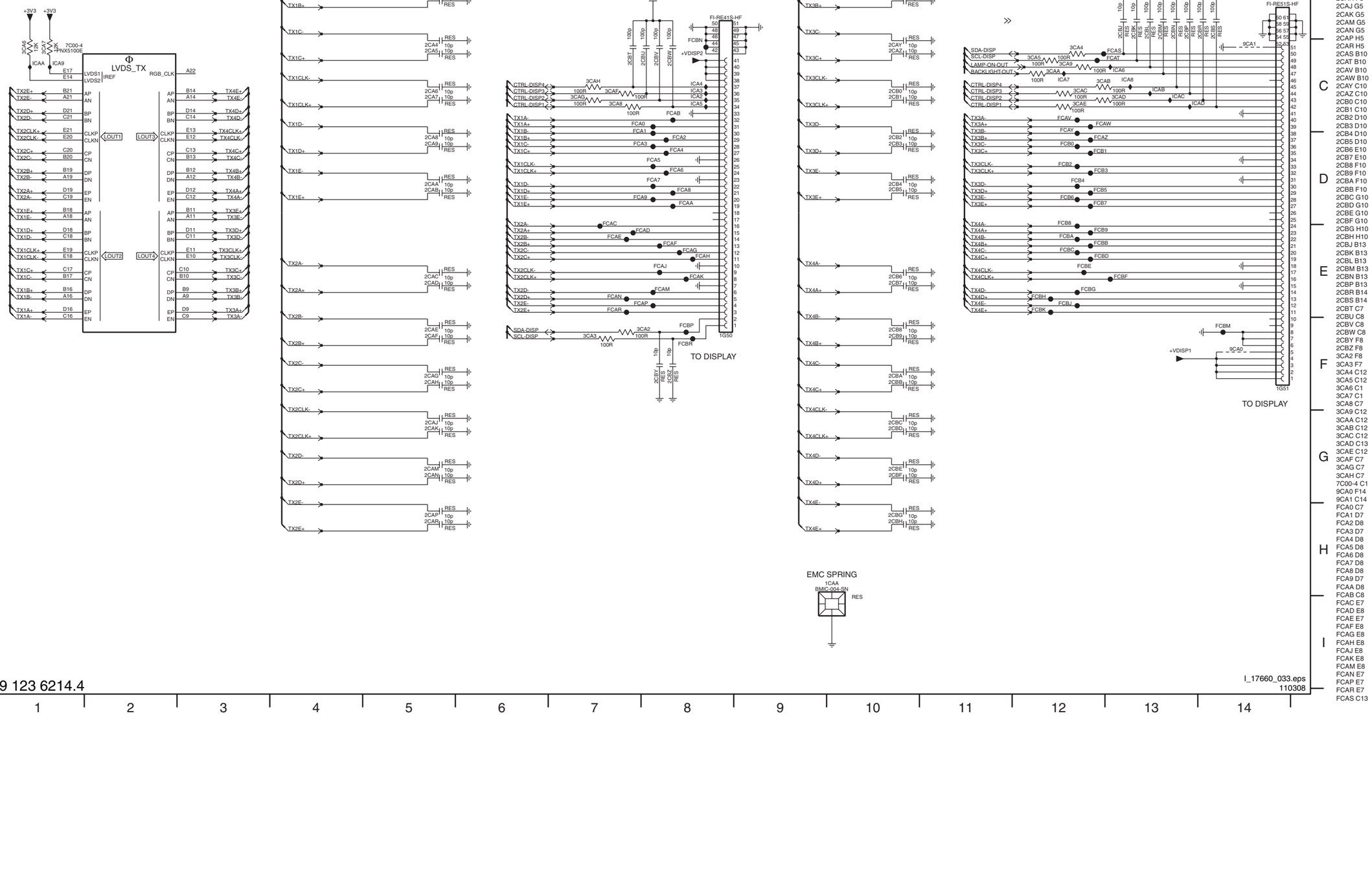
2C55 D1	5C61 D6
2C56 D1	5C62 E6
2C57 D9	5C63 E6
2C58 F9	5C64 F6
2C59 A1	5C65 F6
2C60-1 B1	5C66 D8
2C60-2 B1	5C67 E8
2C60-3 B1	5C68 E8
2C60-4 B1	5C69 E8
2C61-1 B2	5C70 F8
2C61-2 B2	7C00-10 A4
2C61-3 B2	7C00-11 A7
2C61-4 B2	CC60 A3
2C62-1 B2	IC80 D7
2C62-2 D6	IC81 D7
2C62-3 B2	IC82 E7
2C62-4 E6	IC83 E7
2C63-1 B3	IC84 F7
2C63-2 B3	IC85 F7
2C63-3 E6	IC86 D9
2C63-4 B3	IC87 E9
2C64 B3	IC88 E9
2C65 B3	IC89 E9
2C66-1 C1	IC90 F9
2C66-2 C2	
2C66-3 C2	
2C66-4 C2	
2C67-1 C2	
2C67-2 C2	
2C67-3 C2	
2C67-4 C2	
2C68-1 D1	
2C68-2 D2	
2C68-3 D2	
2C68-4 D2	
2C69-1 D2	
2C69-2 D2	
2C69-3 D2	
2C69-4 D2	
2C70-1 D3	
2C70-2 D3	
2C70-3 D3	
2C70-4 D3	
2C71 E2	
2C72 E2	
2C73 E2	
2C74 E2	
2C75 E2	
2C76 E3	
2C77 C9	
2C78-1 B1	
2C78-2 B1	
2C78-3 B1	
2C78-4 D3	
2C79 D6	
2C80 D6	
2C81 B3	
2C82 F6	
2C83 F6	
2C84 D8	
2C85 D9	
2C86 D9	
2C87 D9	
2C88 E9	
2C89 E9	
2C90 F9	
2C91 F8	
2C92 F9	
2C93 D7	
2C94 F7	
2C95 A1	
2C96 A2	
2C97 A2	
5C60 D6	

SSB: PNX5100: AmbiLight

SSB: PNX5100: LVDS

B05E PNX5100: LVDS

B05E



1CAA H10
1G50 F8
1G51 F14
2CA0 B5
2CA1 B5
2CA2 B5
2CA3 B5
2CA4 C5
2CA5 C5
2CA6 C5
2CA7 C5
2CA8 D5
2CA9 D5
2CAA D5
2CAB D5
2CAC E5
2CAD E5
2CAE F5
2CAF F5
2CAG F5
2CAH F5
2CAJ G5
2CAK G5
2CAM G5
2CAN G5
2CAP H5
2CAR H5
2CAS B10
2CAT B10
2CAV B10
2CAW B10
2CAY C10
2CAZ C10
2CB0 C10
2CB1 C10
2CB2 D10
2CB3 D10
2CB4 D10
2CB5 D10
2CB6 E10
2CB7 E10
2CB8 F10
2CB9 F10
2CBA F10
2CBB F10
2CBC G10
2CBD G10
2CBE G10
2CBF G10
2CBG H10
2CBH H10
2CBJ B13
2CBK B13
2CBL B13
2CBM B13
2CBN B13
2CBP B13
2CBR B14
2CBS B14
2CBT C7
2CBU C8
2CBV C8
2CBW C8
2CBY F8
2CBZ F8
3CA2 F8
3CA3 F7
3CA4 C12
3CA5 C12
3CA6 C1
3CA7 C1
3CA8 C7
3CA9 C12
3CAA C12
3CAB C12
3CAC C12
3CAD C13
3CAE C12
3CAF C7
3CAG C7
3CAH C7
7C00-4 C1
9CA0 F14
9CA1 C14
FCA0 C7
FCA1 D7
FCA2 D8
FCA3 D7
FCA4 D8
FCA5 D8
FCA6 D8
FCA7 D8
FCA8 D8
FCA9 D7
FCAA D8
FCAB C8
FCAC E7
FCAD E8
FCAE E7
FCAF E8
FCAG E8
FCAH E8
FCAJ E8
FCAK E8
FCAM E8
FCAN E7
FCAP E7
FCAR E7
FCAS C13

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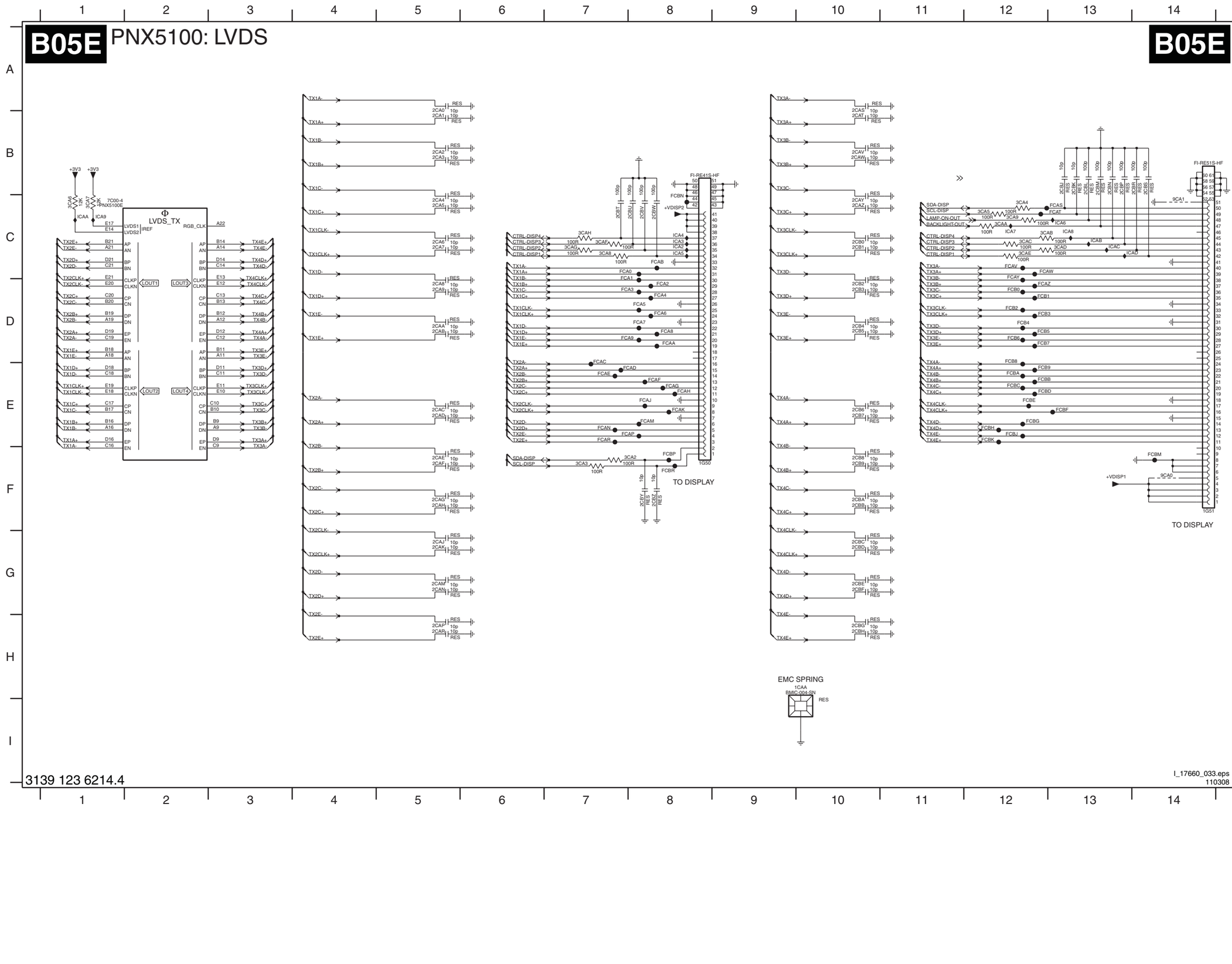
SSB: PNX5100: LVDS

B05E PNX5100: LVDS

B05E



1CAA H10
1G50 F8
1G51 F14
2CA0 B5
2CA1 B5
2CA2 B5
2CA3 B5
2CA4 C5
2CA5 C5
2CA6 C5
2CA7 C5
2CA8 D5
2CA9 D5
2CAA D5
2CAB D5
2CAC E5
2CAD E5
2CAE F5
2CAF F5
2CAG F5
2CAH F5
2CAJ G5
2CAK G5
2CAM G5
2CAN G5
2CAP H5
2CAR H5
2CAS B10
2CAT B10
2CAV B10
2CAW B10
2CAY C10
2CAZ C10
2CB0 C10
2CB1 C10
2CB2 D10
2CB3 D10
2CB4 D10
2CB5 D10
2CB6 E10
2CB7 E10
2CB8 F10
2CB9 F10
2CBA F10
2CBB F10
2CBC G10
2CBD G10
2CBE G10
2CBF G10
2CBG H10
2CBH H10
2CBJ B13
2CBK B13
2CBL B13
2CBM B13
2CBN B13
2CBP B13
2CBR B14
2CBS B14
2CBT C7
2CBU C8
2CBV C8
2CBW C8
2CBY F8
2CBZ F8
3CA2 F8
3CA3 F7
3CA4 C12
3CA5 C12
3CA6 C1
3CA7 C1
3CA8 C7
3CA9 C12
3CAA C12
3CAB C12
3CAC C12
3CAD C13
3CAE C12
3CAF C7
3CAG C7
3CAH C7
7C00-4 C1
9CA0 F14
9CA1 C14
FCA0 C7
FCA1 D7
FCA2 D8
FCA3 D7
FCA4 D8
FCA5 D8
FCA6 D8
FCA7 D8
FCA8 D8
FCA9 D7
FCAA D8
FCAB C8
FCAC E7
FCAD E8
FCAE E7
FCAF E8
FCAG E8
FCAH E8
FCAJ E8
FCAK E8
FCAM E8
FCAN E7
FCAP E7
FCAR E7
FCAS C13
FCAT C13
FCAV C12
FCAW C12
FCAY D12
FCAZ D12
FCB0 D12
FCB1 D12
FCB2 D12
FCB3 D12
FCB4 D12
FCB5 D12
FCB6 D12
FCB7 D12
FCB8 E12
FCB9 E12
FCBA E12
FCBB E12
FCBC E12
FCBD E12
FCBE E12
FCBF E13
FCBG E12
FCBH E12
FCBJ E12
FCBK E12
FCBM F14
FCBN C8
FCBP F8
FCBR F8
ICA2 C8
ICA3 C8
ICA4 C8
ICA5 C8
ICA6 C13
ICA7 C12
ICA8 C13
ICA9 C1
ICAA C1
ICAB C13
ICAC C13
ICAD C14

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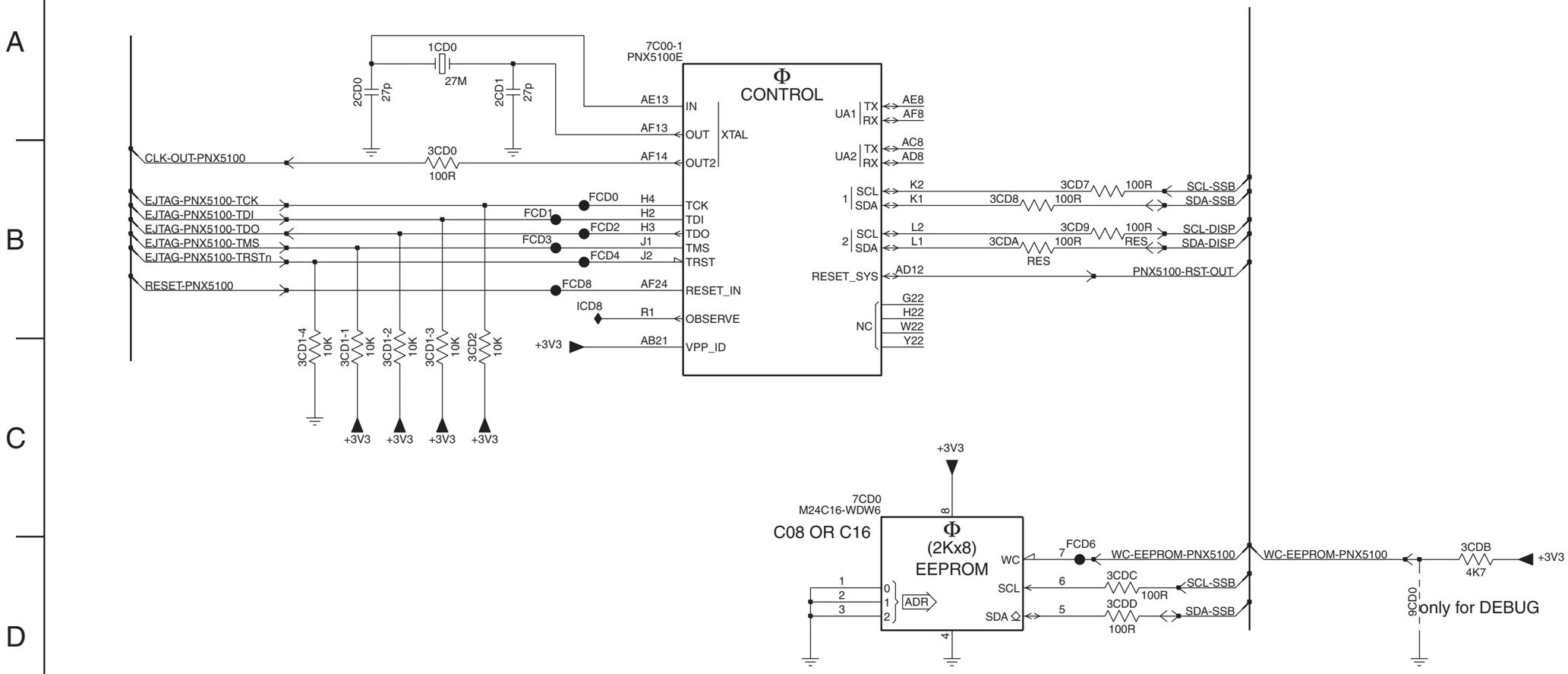
SSB: PNX5100: Control

B05F PNX5100: CONTROL

B05F

1CD0 A2
2CD0 A2
2CD1 A2
3CD0 B2
3CD1-1 C2
3CD1-2 C2
3CD1-3 C2
3CD1-4 C1
3CD2 C2
3CD7 B5
3CD8 B5
3CD9 B5
3CDA B5
3CDB D7
3CDC D6
3CDD D6
7C00-1 A3
7CD0 C4
9CD0 D7
FCD0 B3
FCD1 B3
FCD2 B3
FCD3 B3
FCD4 B3
FCD6 D5
FCD8 B3
ICD8 B3



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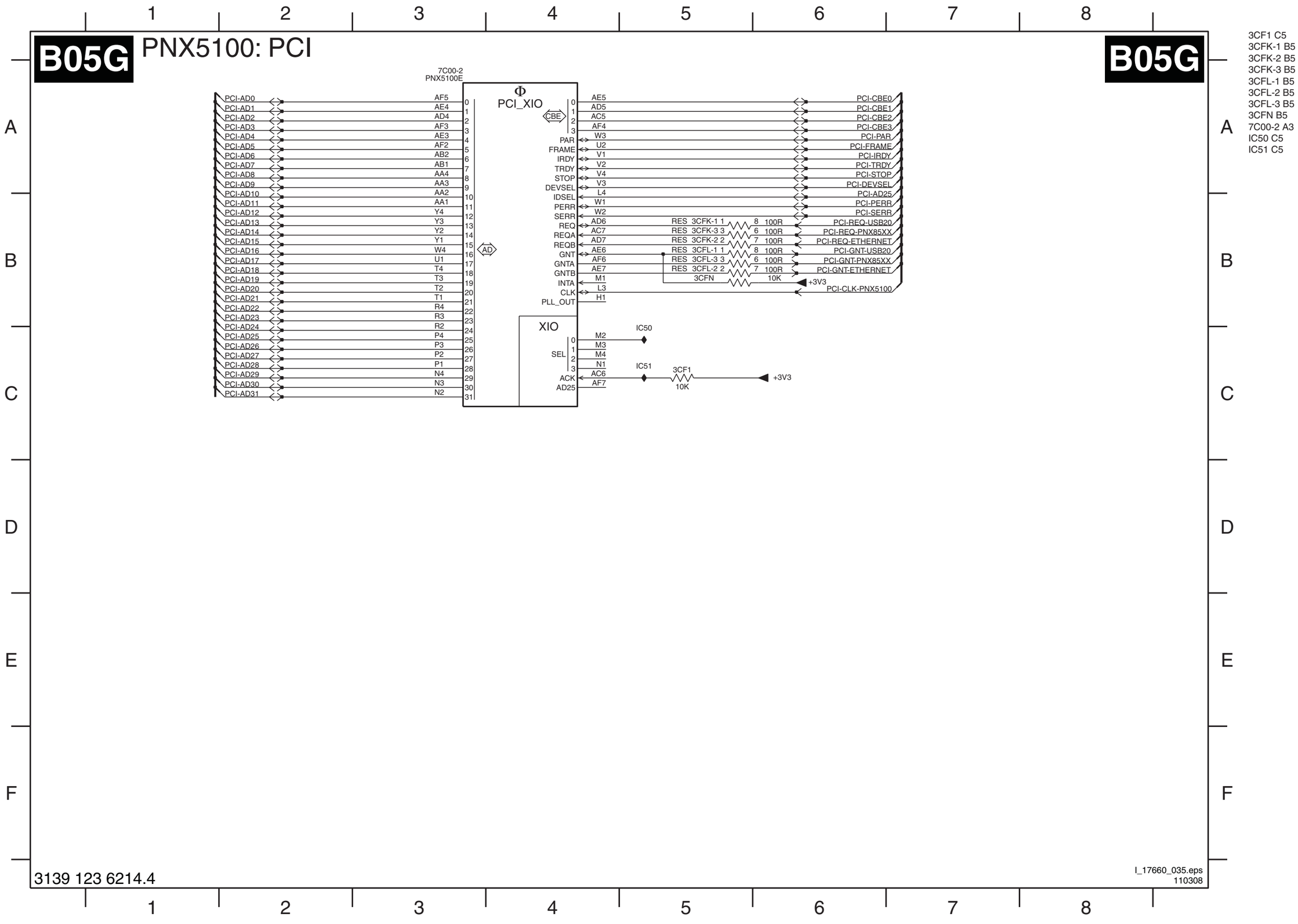
SSB: PNX5100: PCI



SSB: PNX5100: Display Interfacing

B05H PNX5100: DISPLAY-INTERFACING

B05H

VDISP-SWITCH

RESERVED
NOTE : CAN BE CAPACITOR OR WIRE BRIDGE

3139 123 6214.4

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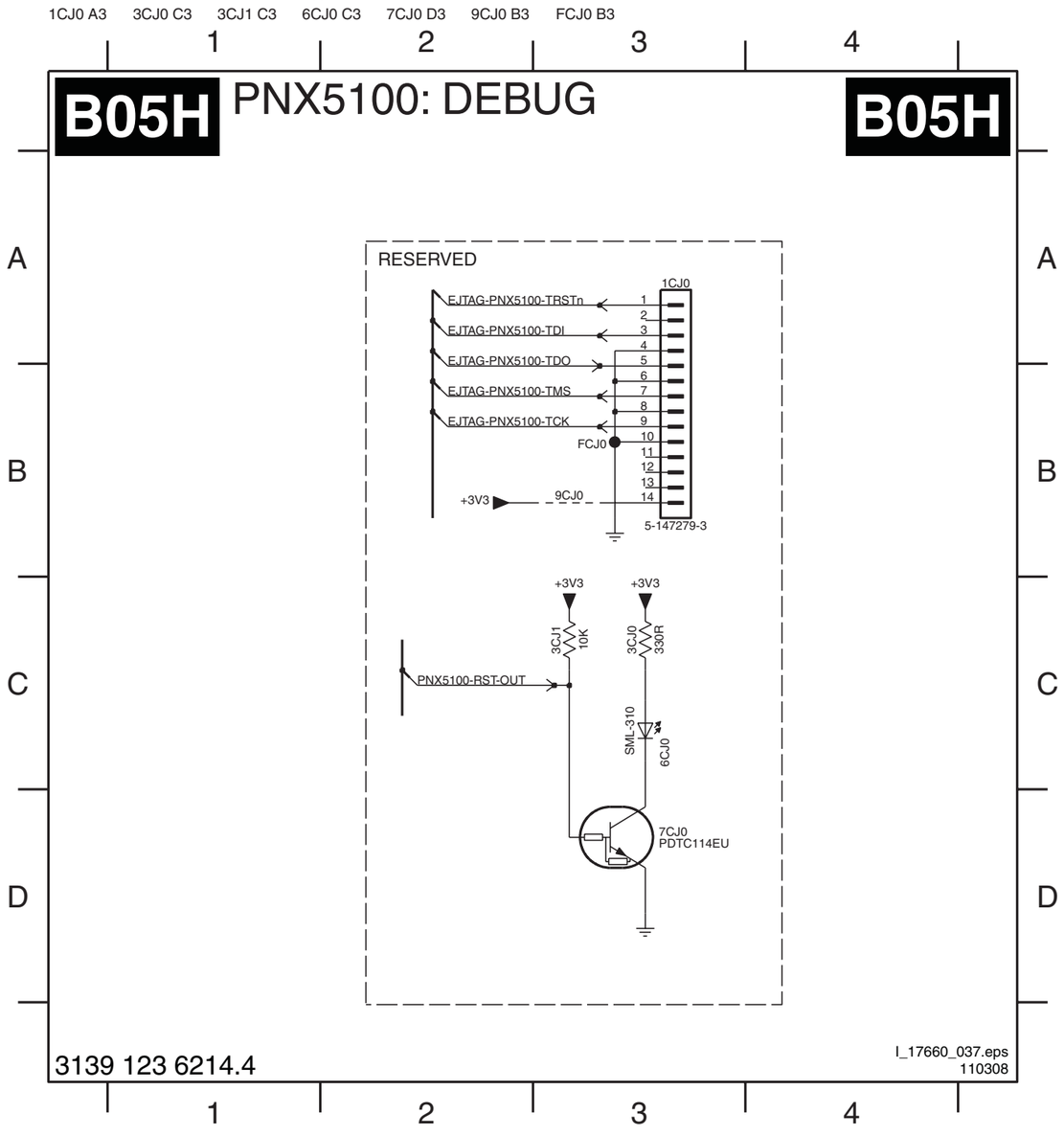
110308

2CG0 A5
2CG1 B5
2CG2 C4
2CG3 C2
2CG4 D5
2CG5 F5
2CG6 F5
2CG7 F5
2CG8 F5
2CGB H12
2CGC H12
2CGD G11
2CH0 D11
2CH1 E12
3CG0-2 C5
3CG0-3 C5
3CG0-4 C4
3CG1 C2
3CG5 D4
3CG6 D5
3CG7 D5
3CG8 D5
3CG9 D5
3CGA D3
3CGB E3
3CGC E3
3CGD E3
3CGE E3
3CGF E3
3CGG F3
3CGH F3
3CGJ F3
3CGN H11
3CGP H12
3CGR H13
3CGS G12
3CGT F12
3CGV F13
3CGZ B12
3CH0 B12
3CH1 B12
3CH2 B4
3CH3 G11
3CH4 G11
3CH5 G11
3CH7 C2
3CH8 D11
3CH9 D12
3CHA D13
3CHB D12
3CHC D11
3CHD D11
3CHE E11
3CHF E12
3CHG E13
5CG0 A4
5CG1 A4
5CG2 B4
5CG3 B4
6CG0 C3
6CG2 B5
7C00-3 A8
7CG0 B2
7CG1 B3
7CG2 C4
7CG4 H12
7CG5 G12
7CG6-1 G13
7CG6-2 G13
7CG8 B12
7CH0 D12
7CH1-1 D13
7CH1-2 D13
9CG0 B3
9CG1 B3
9CG4 G13
9CG6 G10
9CG7 G10
9CG8 G10
9CH0 E13
FCG0 A5
FCG1 B5
FCG2 E6
FCG3 E6
FCG4 E6
FCG5 E6
FCG6 G13
ICG0 B4
ICG1 C4
ICG2 C2
ICG3 C2
ICG4 C4
ICG5 D4
ICG6 C5
ICG7 E2
ICG8 F2
ICG9 F2
ICGA F2
ICGH H12
ICGK F13
ICGM G12
ICGN G11
ICGP G11
ICGR G10
ICGV B7
ICGW C3
ICGY B12
ICGZ B7
ICH0 G9
ICH1 G9
ICH2 G9
ICH3 H9
ICH4 A7
ICH5 D10
ICH6 D11
ICH7 D11
ICH8 D12
ICH9 D13
ICHA E13

SSB: PNX5100: Debug



Personal Notes:

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SSB: PNX5100: FPGA AmbiLight

B06A FPGA AMBILIGHT

B06A

FOR DEBUG

FOR DEBUG

FOR DEBUG

FOR DEBUG

FOR FACTORY USE ONLY

TO AMBILIGHT

TO FAN

7F00 XC3S100E-4VQG100C

SPARTAN-3 FPGA

BANK0

BANK1

BANK2

BANK3

7F01 M25P20-VMN 2M FLASH

7F02 PCA9540B

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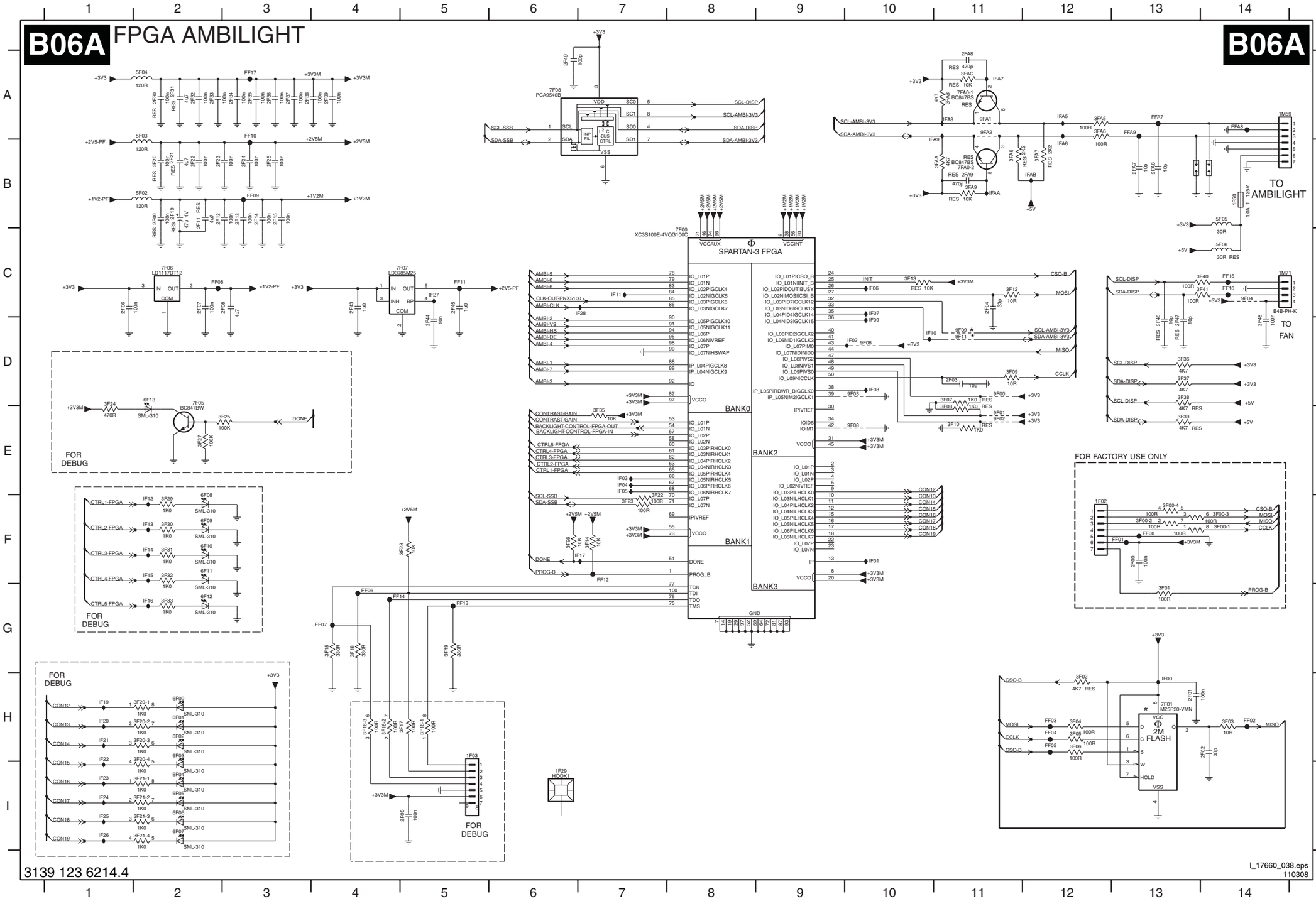
SSB: PNX5100: FPGA AmbiLight

B06A FPGA AMBILIGHT **B06A**



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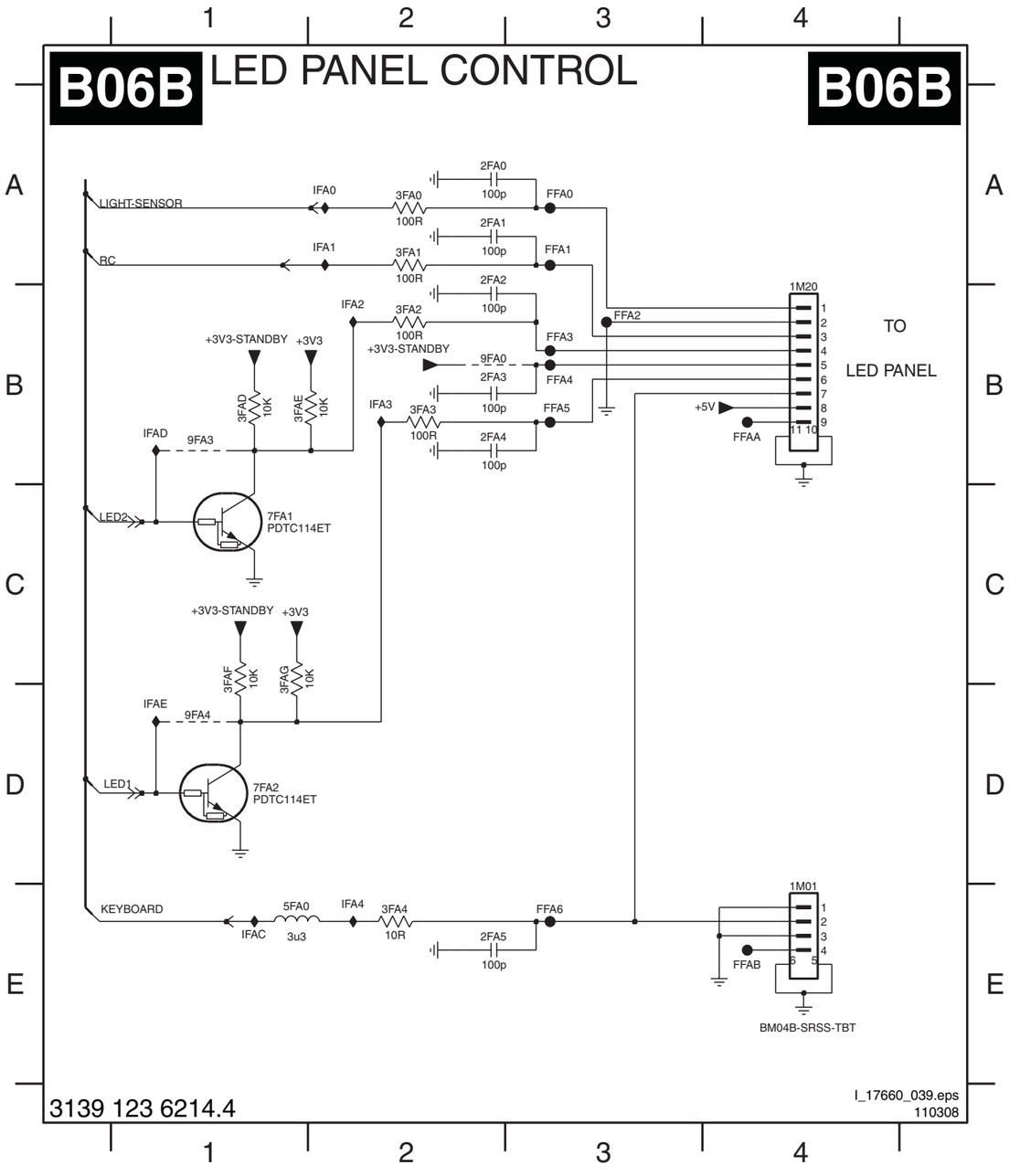
1F02	F12	6F02	H2
1F03	H5	6F03	H2
1F29	I6	6F04	I2
1F50	B14	6F05	I2
1M59	A14	6F06	I2
1M71	C14	6F07	I2
2F00	F13	6F08	F2
2F01	H13	6F09	F2
2F02	H14	6F10	F2
2F03	D11	6F11	F2
2F04	C11	6F12	G2
2F05	I5	6F13	D2
2F06	C1	7F00	C8
2F07	C2	7F01	H13
2F08	C2	7F05	D2
2F09	B2	7F06	C2
2F10	B2	7F07	C5
2F11	B2	7F08	A6
2F12	B2	7FA0-1	A11
2F13	B3	7FA0-2	B11
2F14	B3	9F00	D11
2F15	B3	9F01	E11
2F20	B2	9F02	E11
2F21	B2	9F03	D10
2F22	B2	9F04	C14
2F23	B2	9F06	D10
2F24	B3	9F08	E10
2F25	B3	9F09	D11
2F30	A2	9F11	D11
2F31	A2	9FA1	A11
2F32	A2	9FA2	A11
2F33	A2	FF00	F13
2F34	A3	FF01	F13
2F35	A3	FF02	H14
2F36	A3	FF03	H12
2F37	A3	FF04	H12
2F38	A3	FF05	H12
2F39	A4	FF06	G4
2F43	C4	FF07	G4
2F44	D5	FF08	C2
2F45	C5	FF09	B3
2F46	D13	FF10	A3
2F47	D13	FF11	C5
2F48	D14	FF12	F7
2F49	A6	FF13	G5
2F50	A6	FF14	G4
2F51	F2	FF15	C14
2F52	F2	FF16	C14
2F53	G2	FF17	A3
2F54	E7	FFA7	A13
2F55	D13	FFA8	E14
2F56	D13	FFA9	A13
2F57	E13	IF00	H13
2F58	C14	IF01	F10
2F59	C14	IF02	D10
3FA1	A12	IF03	E7
3FA2	A12	IF04	E7
3FA3	B12	IF05	E7
3FA4	B11	IF06	C10
3FA5	B11	IF07	C10
3FA6	A11	IF08	D10
3FAA	B11	IF09	D10
3FAB	A11	IF10	D10
3FAC	A11	IF11	C7
5F02	B2	IF12	F2
5F03	A2	IF13	F2
5F04	A2	IF14	F2
5F05	B14	IF15	G2
5F06	C14	IF16	H4
6F00	H2	IF17	H1
6F01	H2	IF18	H1
		IF19	H1
		IF20	H1
		IF21	H1
		IF22	H1
		IF23	I1
		IF24	I1
		IF25	I1
		IF26	I1
		IF27	C5
		IF28	C7
		IFA5	A12
		IFA6	B12
		IFA7	A11
		IFA8	B11
		IFA9	B11
		IFAA	B11
		IFAB	B12

SSB: PNX5100: LED Panel Control

1M01 E4	2FA2 A2	3FA0 A2	3FA4 E2	3FAG C1	9FA0 B2	FFA1 A3	FFA5 B3	IFA0 A2	IFA4 E2
1M20 B4	2FA3 B2	3FA1 A2	3FAD B1	5FA0 E1	9FA3 B1	FFA2 B3	FFA6 E3	IFA1 A2	IFAC E1
2FA0 A2	2FA4 B2	3FA2 B2	3FAE B1	7FA1 C1	9FA4 D1	FFA3 B3	FFAA B4	IFA2 B2	IFAD B1
2FA1 A2	2FA5 E2	3FA3 B2	3FAF C1	7FA2 D1	FFA0 A3	FFA4 B3	FFAB E4	IFA3 B2	IFAE D1



Personal Notes:

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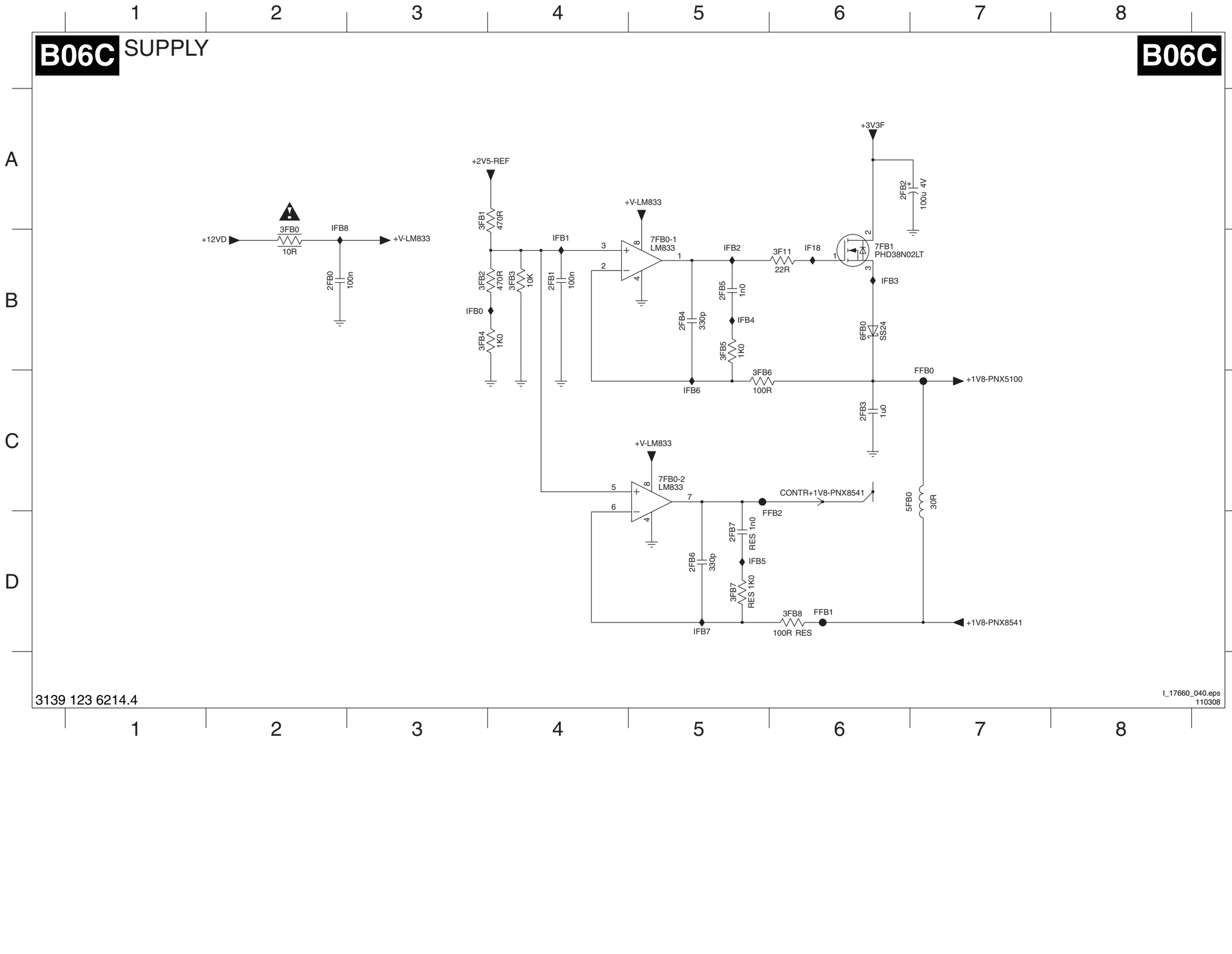
SSB: PNX5100: Supply



2FB0 B2
2FB1 B4
2FB2 A6
2FB3 C6
2FB4 B5
2FB5 B5
2FB6 D5
2FB7 D5
3F11 B6
3FB0 B2
3FB1 A3
3FB2 B3
3FB3 B4
3FB4 B3
3FB5 B5
3FB6 C5
3FB7 D5
3FB8 D6
5FB0 C6
6FB0 B6
7FB0-1 B5
7FB0-2 C5
7FB1 B6
FFB0 C7
FFB1 D6
FFB2 D6
IF18 B6
IFB0 B3
IFB1 B4
IFB2 B5
IFB3 B6
IFB4 B5
IFB5 D5
IFB6 C5
IFB7 D5
IFB8 A2

SSB: CI: PCMCIA Connector

1P00-A B1 1P00-B B5 2P15 A8 | 2P16 C8 3P09 A2 3P10-1 A5 | 3P10-2 A5 3P12 A5 3P13-1 A5 | 3P13-2 A5 3P13-3 A5 3P13-4 A5 | 3P20 D2 3P24 D6 3P25 E6 | 3P26-1 E6 3P26-2 E6 3P26-3 E6 | 3P26-4 E6 3P27-1 E6 3P27-2 E6 | 3P27-3 E6 3P27-4 E6 3P80-1 B8 | 3P80-2 B9 3P80-3 B9 3P80-4 B8 | 3P81 B8 3P82-1 D9 3P82-2 D8 | 3P82-3 D9 3P82-4 D8 3P83-3 D9 | 3P83-4 D8 3P84-1 E8 3P84-2 E8 | 3P84-3 E8 3P84-4 E8 3P85-1 E8 | 3P85-2 E8 3P85-3 E8 3P85-4 E8 | 3P86 E8 3P87 E8 3P88 E8 | 7P15 A8 7P16 C8 FP04 A2 | FP05 D6 IP00 A6 IP01 A6 | IP02 A6 IP03 A6 IP04 A6 | IP05 A6 IP08 D2 IP09 C9 | IP18 D2

B07A CI: PCMCIA CONNECTOR

B07A

+5V — 3P09 +T 0R4 — FP04 — PCMCIA-VCC-VPP

CABLE CARD INTERFACE

+3V3 PCMCIA-VCC-VPP

IP00 CA-INPACK (3P10-4 10K)
IP01 CA-WAIT (3P10-2 10K)
MOCLK_VS2 (3P10-1 10K)
IP02 IRQ-CA (RES 3P12 10K)
IP03 CA-CD1 (3P13-1 10K)
IP04 CA-CD2 (3P13-3 10K)
IP05 CA-VS1 (3P13-2 10K)

ROW_A 1P00-A

1	GND1	
2	D3	PCMCIA-D3
3	D4	PCMCIA-D4
4	D5	PCMCIA-D5
5	D6	PCMCIA-D6
6	D7	PCMCIA-D7
7	CE1	CA-CE1
8	A10	PCMCIA-A10
9	OE	CA-OE
10	A11	PCMCIA-A11
11	A9	PCMCIA-A9
12	A8	PCMCIA-A8
13	A13	PCMCIA-A13
14	A14	PCMCIA-A14
15	WEIP	CA-WE
16	RDYIBSY	IRQ-CA
17	VCC1	PCMCIA-VCC-VPP
18	VPP1	
19	A16	CA-MIVAL
20	A15	CA-MICLK
21	A12	PCMCIA-A12
22	A7	PCMCIA-A7
23	A6	PCMCIA-A6
24	A5	PCMCIA-A5
25	A4	PCMCIA-A4
26	A3	PCMCIA-A3
27	A2	PCMCIA-A2
28	A1	PCMCIA-A1
29	A0	PCMCIA-A0
30	D0	PCMCIA-D0
31	D1	PCMCIA-D1
32	D2	PCMCIA-D2
33	WPIIOIS16	3P20 — PCMCIA-VCC-VPP
34	GND2	IP18 10K IP08
69 70		

ROW_B 1P00-B

35	GND3	
36	CD1	CA-CD1
37	D11	MDO3
38	D12	MDO4
39	D13	MDO5
40	D14	MDO6
41	D15	MDO7
42	CE2	CA-CE2
43	VS1	CA-VS1
44	IORD	CA-IORD
45	IOWR	CA-IOWR
46	A17	CA-MISTRT
47	A18	CA-MDI0
48	A19	CA-MDI1
49	A20	CA-MDI2
50	A21	CA-MDI3
51	VCC2	PCMCIA-VCC-VPP
52	VPP2	
53	A22	CA-MDI4
54	A23	CA-MDI5
55	A24	CA-MDI6
56	A25	CA-MDI7
57	VS2	MOCLK_VS2
58	RESET	CA-RST
59	WAIT	CA-WAIT
60	INPACK	CA-INPACK
61	REG	CA-REG
62	BVD2ISPKR	MOVAL
63	BVD1ISTSCHG	MOSTRT
64	D8	MDO0
65	D9	MDO1
66	D10	MDO2
67	CD2	CA-CD2
68	GND4	
71 72		FP05

+3V3 — 2P15 100n — 7P15 74LVC245A (20; 3EN1 1; 3EN2 19; G3)

MDO3	18	2 — 4 3P80-4 47R	CA-MDO3
MDO4	17	3 — 3 3P80-3 47R	CA-MDO4
MDO6	16	4 — 2 3P80-2 47R	CA-MDO6
MDO5	15	5 — 47R 1 3P80-1 47R	CA-MDO5
MDO7	14	6 — 3P81 47R	CA-MDO7
	13	7	
	12	8	
	11	9	
		10	

+3V3 — 2P16 100n — 7P16 74LVC245A (20; 3EN1 1; 3EN2 19; G3)

MOCLK_VS2	18	2 — 4 3P82-4 47R	IP09 CA-MOCLK_VS2
MDO0	17	3 — 3 3P82-3 47R	CA-MDO0
MDO2	16	4 — 2 3P82-2 47R	CA-MDO2
MDO1	15	5 — 47R 1 3P82-1 47R	CA-MDO1
MOVAL	14	6 — 4 3P83-4 47R	CA-MOVAL
MOSTRT	13	7 — 47R 3 3P83-3 47R	CA-MOSTRT
	12	8	
	11	9	
		10	

3P24 10K MOSTRT
3P25 10K MOVAL
3P26-3 10K MDO0
3P26-2 10K MDO1
3P26-1 10K MDO2
3P26-4 10K MDO3
3P27-4 10K MDO4
3P27-3 10K MDO5
3P27-2 10K MDO6
3P27-1 10K MDO7

RESERVED

MDO3	4 3P84-4 47R	CA-MDO3
MDO4	3 3P84-3 47R	CA-MDO4
MDO5	1 3P84-1 47R	CA-MDO5
MDO6	2 3P84-2 47R	CA-MDO6
MDO7	3P88 47R	CA-MDO7
MDO1	2 3P85-2 47R	CA-MDO1
MDO2	3 3P85-3 47R	CA-MDO2
MDO0	4 3P85-4 47R	CA-MDO0
MOVAL	1 3P85-1 47R	CA-MOVAL
MOSTRT	3P86 47R	CA-MOSTRT
MOCLK_VS2	3P87 47R	CA-MOCLK_VS2

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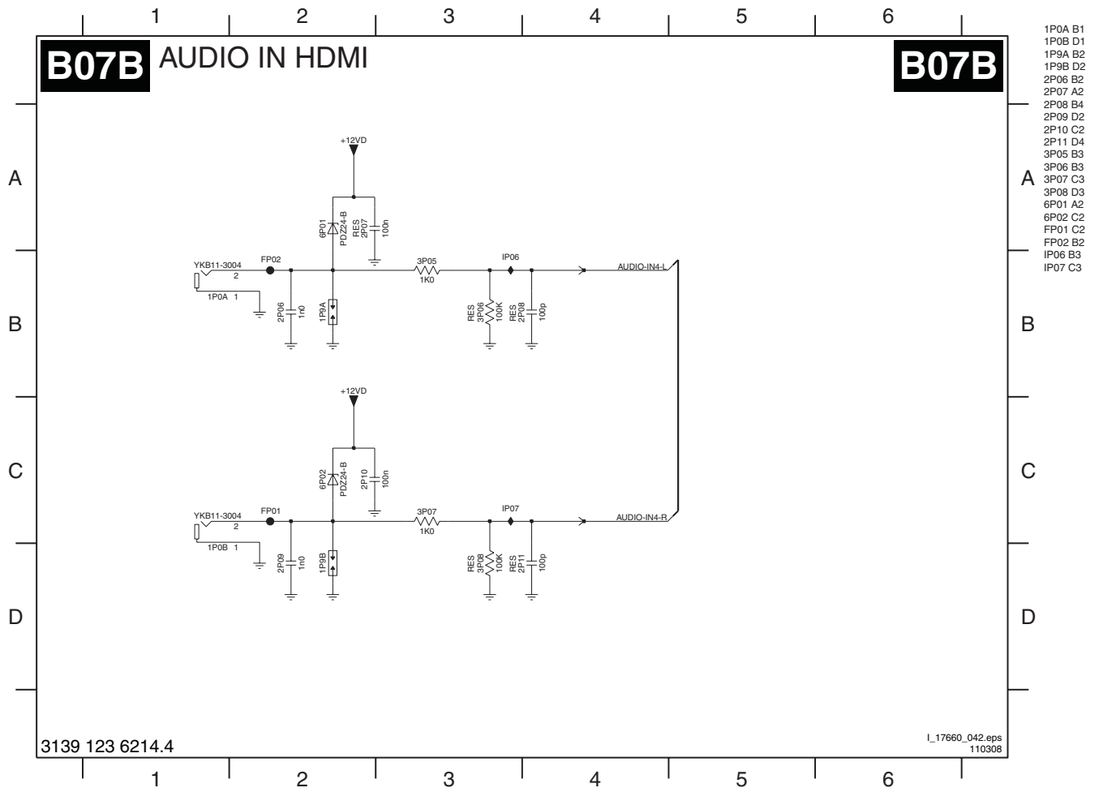
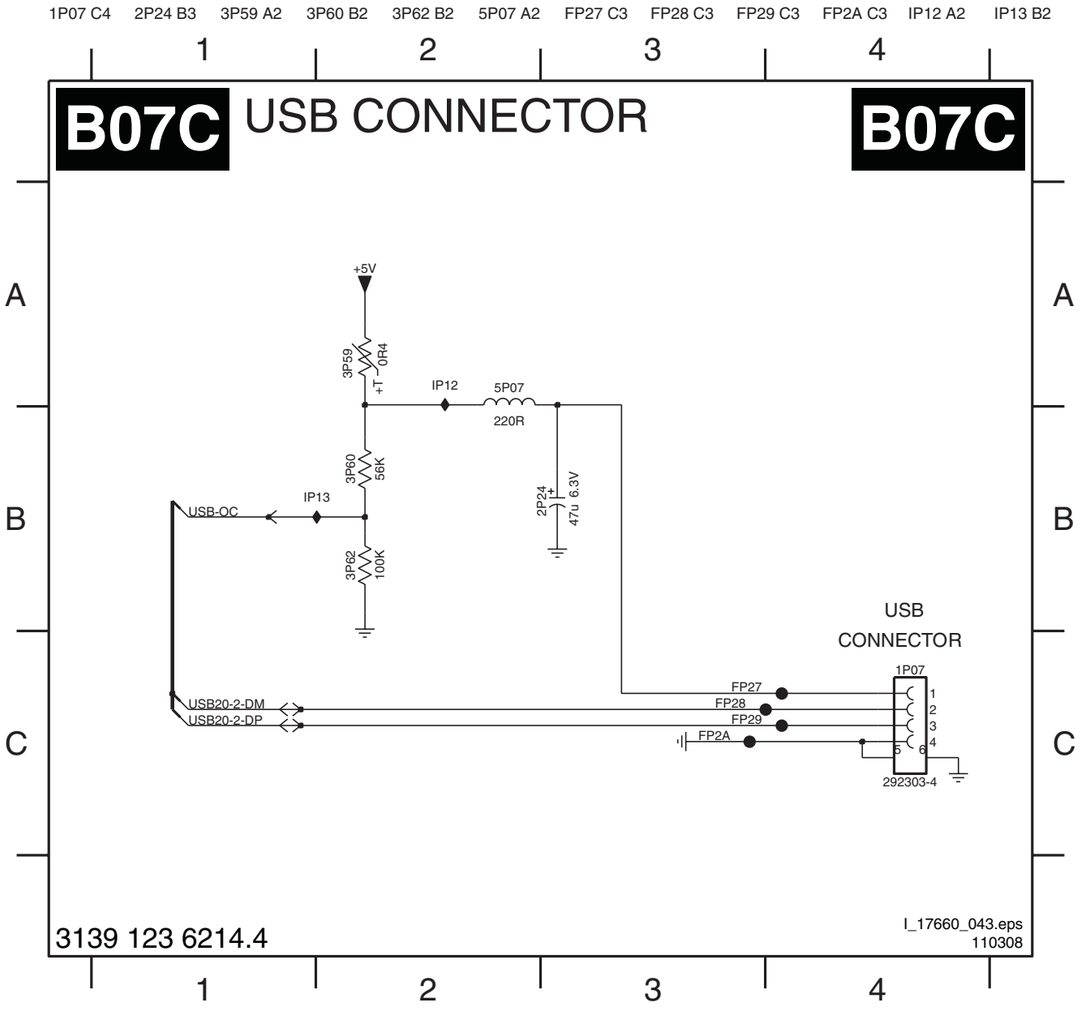
SSB: Audio-In HDMI



SSB: USB Connector



SSB: HDMI

B07D HDMI

B07D

HDMI CONNECTOR 2

HDMI CONNECTOR 3

HDMI CONNECTOR 1

HDMI CONNECTOR SIDE

EDID NVM HDMI 2

EDID NVM HDMI 3

EDID NVM HDMI 1

EDID NVM HDMI 4 SIDE

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1P02 A8
1P03 A1
1P04 D8
1P05 F1
1P50 A10
1P51 A10
1P52 A11
1P53 A3
1P54 A3
1P55 A4
1P56 D4
1P57 D11
1P58 F3
1P59 F4
1P5A F4
1P5B H4
1P60 E10
1P61 E11
1P62 E11
1P63 G11
2P01 E12
2P02 E13
2P05 G12
2P55 A12
2P56 A12
2P57 A5
2P58 A5
2P5A C5
2P5C D12
2P5D F5
2P5E F6
2P5G H5
3P01 E13
3P02 E14
3P04 F12
3P11 E4
3P16 F13
3P17 F13
3P18 F13
3P19 F13
3P23 C12
3P34 G13
3P36 G10
3P38 I10
3P63 C13
3P64 B13
3P65 B12
3P66 B13
3P67 B12
3P68 A13
3P69 A14
3P6A C6
3P6B B6
3P6C B5
3P6D B6
3P6E B5
3P6F A6
3P6G A6
3P6H D3
3P6J C4
3P6K C6
3P6L D10
3P6N C11
3P6P D13
3P6S G6
3P6T G6
3P6U G5
3P6V G6
3P6W G6
3P6Y F6
3P6Z F7
3P70 H3
3P72 H5
3P73 H6
3P75 I9
5P01 A12
5P02 A5
5P03 F5
5P08 E12
6P03 G10
6P04 I3
6P05 D3
6P06 D10
7P03 E5
7P04 B11
7P05 B4
7P06 G4
7P08 F11
7P09 G12
7P12 C5
7P30 H5
7P31 D12
7P32 I10
9P0J I10
9P0K H10
9P12 C6
9P13 G6
9P14 F13
9P17 C13
9P18 D5
FP06 B9
FP07 B9
FP08 B9
FP09 B9
FP0A B9
FP0B B12
FP0C B9
FP0E B1
FP0F B1
FP0G B1
FP0H B1
FP0J B1
FP0K B5
FP0P B1
FP0R G2
FP0S G2
FP0T G2
FP0U G2
FP0V G6
FP0W G1
FP10 F8
FP11 F9
FP12 F9
FP13 F8
FP14 F9
FP15 F8
FP16 F13
FP17 G1
IP10 D5
IP11 E4
IP17 D13
IP19 E14
IP21 G12
IP22 G12
IP25 F12
IP26 E11
IP59 A12
IP5A C5
IP5B C12
IP5C A14
IP5D A13
IP5E A6
IP5F A7
IP5G C5
IP5H C12
IP5J B4
IP5K B12
IP5L B5
IP5M H5
IP5N F6
IP5P F7
IP5Q H5
IP5R G4
IP5T G5
IP5U I9
IP5V H13
IP5W C13
IP5Y I10
IP5Z I10

SSB: HDMI Switch

B07E HDMI SWITCH

B07E

TERMINATION ONLY when AD8195 not stuffed!!

HDMI/DVI BUFFER

7P01 AD8195

7P02 AD8197A-ASTZ

2P03 F6 FP20 E7
2P27 C5 FP21 E7
2P28 E7 FP22 F7
2P29 E7 FP23 F2
2P30 D6 FP24 C6
2P31 D7 IP60 F6
2P32 D7 IP61 C7
2P33 D7 IP62 D7
2P34 D7 IP63 D7
2P35 D7 IP64 B4
2P36 D8 IP65 C5
2P37 D8 IP66 D4
2P38 D8 IP67 D4
2P39 D6
2P40 D7
2P41 D7
2P60 E6
2P61 F6
2P62 E7
2P63 F6
2P64 F7
2P65 F7
2P66 F7
2P67 F7
2P68 E7
2P69 F7
2P6A F7
2P6B F8
2P6C F8
2P6D F7
2P6E E8
2P6F E8
2P6G F8
2P6H F8
2P6K F9
2P6M F9
3P03 F6
3P14 B7
3P15 B7
3P21 F7
3P28 A5
3P32 B5
3P33 B5
3P35 C5
3P39 B4
3P40 A8
3P41 C1
3P42 A8
3P43 D1
3P44 A8
3P45 E1
3P46 A8
3P47 E1
3P48 C4
3P49 C5
3P50 B8
3P51 C6
3P52 B8
3P53 E4
3P54 B8
3P55 D4
3P56 B9
3P58 C5
3P76 C1
3P77 C1
3P78 B1
5P04 E6
5P05 E6
5P09 C6
5P10 D6
5P11 D6
6P07 F6
7P01 A6
7P02 B3
9P10 B1
9P11 D6

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SSB: Analogue Externals A

B08A ANALOGUE EXTERNALS A

B08A

SCART2 (AV2)

SCART1 (AV1)

MTJ-505H-01 NI LF

MTJ-505H-01 NI LF

* EU

* EU

* EU

* EU

AUDIO-CL-L
AUDIO-CL-R
A-PLOP
REGIMBEAU_CVBS-SWITCH
Y_CVBS-MON-OUT-SC
CVBS-TER-OUT
CVBS-OUT-SC1
AP-SCART-OUT-L
AP-SCART-OUT-R
AUDIO-IN2-L
AUDIO-IN2-R
AV3-PB
AV2-STATUS
AV3-Y
AV3-PR
AV2-BLK
AV2-Y_CVBS
AV1-AUDIO-L
AV1-AUDIO-R
AV1-B
AV1-STATUS
AV1-G
AV1-R
AV1-BLK-BO
AV1-BLK
AV1-CVBS
CVBS-OUT-SC1

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1001 E11 6E12 B6
1009 C12 6E14 C6
1015 C12 6E22 E12
1022 A6 6E23 D11
1023 B6 6E24 D6
1024 C6 6E26 F11
1025 D6 6E28 G11
1027 D6 6E29 I12
1028 E6 6E30 J11
1E00 A12 6E31 J6
1E01 C14 6E32 I11
1E02 D8 6E34 F6
1E12 D11 6E35 G6
1E13 G7 6E36 I6
1E16 G7 6E37 I5
1E18 F11 7E01-1 A2
1E19 G11 7E01-2 B2
1E22 I13 7E02 D2
1E23 J11 7E04 J1
1E24 J6 7E05 H1
1E25 I11 7E09 H11
1E26 I7 7E14 H6
1E27 I6 7E15 D3
1E31 B12 9E10 I2
2E01 A11 9E20 H10
2E02 H11 FE60 A7
2E04 C11 FE61 B7
2E06 B11 FE62 C7
2E10 C11 FE63 E7
2E12 G12 FE64 E7
2E13 H6 FE65 E7
2E14 F12 FE66 E7
2E15 D12 FE67 F7
2E16 D5 FE68 D7
2E17 G6 FE70 C13
2E18 E12 FE71 D13
2E19 G6 FE72 D13
2E24 H12 FE73 D13
2E29 A5 FE74 D13
2E30 B5 FE75 E13
2E31 D5 FE76 F7
2E32 C5 FE77 F7
2E33 E5 FE78 G7
2E41 I6 FE79 G7
2E44 I12 FE80 E13
2E48 A7 FE81 F13
2E50 A7 FE82 F13
2E51 B7 FE83 F13
2E59 B7 FE84 F13
2E70 C7 FE85 G13
2E73 I2 FEA0 A3
2E74 H2 FEA1 B3
2E75 D1 IE04 E1
2E77 D2 IE05 E5
2E82 C6 IE06 H6
2E83 D6 IE09 H11
2E84 F6 IE18 E10
2E85 G6 IE20 B5
2E86 A13 IE21 C5
2E87 A13 IE22 B11
2E88 B12 IE23 C11
2E89 B13 IE48 H11
2E90 C12 IE51 H5
2E91 C12 IE91 H1
2EA4 A3 IE92 H2
2EA5 B3 IE93 J2
3E02 D6 IE94 J1
3E06 D4 IE96 E2
3E07 B11 IE98 D2
3E11 B6 IEC0 A3
3E12 A11 IEC1 A2
3E14 C6 IEC2 B3
3E15 B11 IEC3 B2
3E16 E6
3E17 E5
3E18 B5
3E19 C11
3E21 C5
3E22 C11
3E24 A5
3E27 B11
3E28 D11
3E30 C11
3E31 E11
3E32 E11
3E34 D5
3E37 A11
3E38 F11
3E43 I12
3E44 H11
3E45 J10
3E51 G6
3E52 J5
3E54 G11
3E55 G5
3E59 I11
3E61 I7
3E62 I6
3E63 A6
3E64 C6
3E68 H12
3E69 H6
3E73 H6
3E99 D2
3EA7 A2
3EA8 B2
3EA9 B2
3EB0 B2
3EB6 H1
3EB7 I2
3EB8 J2
3EB9 J1
6E01 A13
6E02 E6
6E03 B13
6E07 B13
6E08 B7
6E09 C12
6E10 A7

SSB: Analogue Externals B

B08B ANALOGUE EXTERNALS B

B08B

VGA CONNECTOR

1226-02B-15S-FAE-02

EDID NVM VGA

M24C02-WDW6 (256x8) EEPROM

*AP

*EU

CVBS-MON-OUT-CINCH

G-VGA

AUDIO-OUT-L

A-PLOP

AUDIO-OUT-R

R-VGA

AV1-Y_CVBS

B-VGA

SPDIF-OUT

AV2-Y_CVBS

AUDIO-IN3-L

AUDIO-IN3-R

Y_CVBS-MON-OUT-SC

CVBS-MON-OUT-CINCH

Y_CVBS-MON-OUT

CLK-SCL

DATA-SDA

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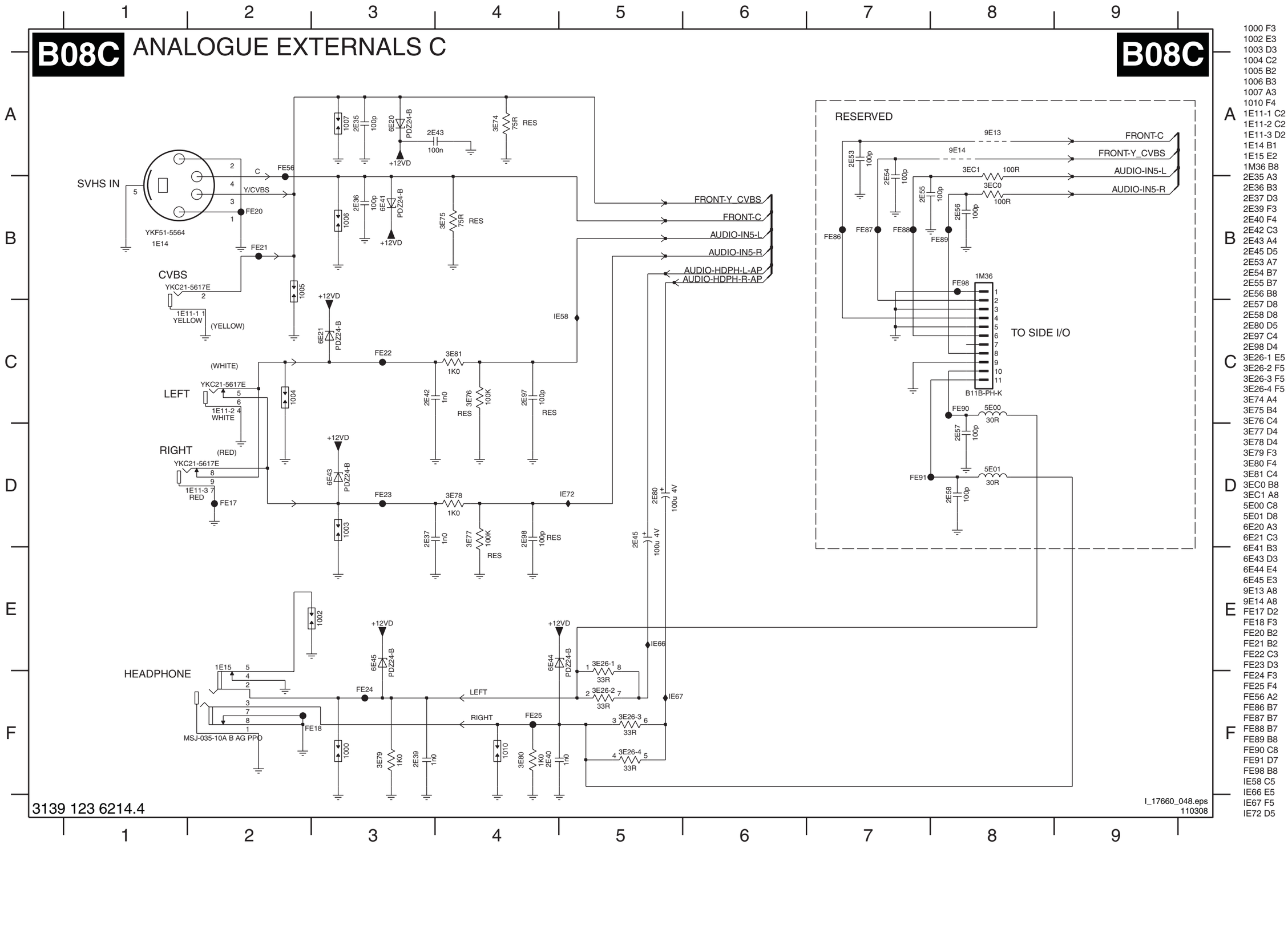
1011 G12 6E40 E4
1012 C4 6E46 G13
1013 F3 6E47 D10
1014 F10 6E48 E10
1016 A4 6E51 G3
1026 E10 6E52 F4
1235 G4 6E53 A6
1240 A5 7E03 G9
1241 A6 7E06-1 I13
1242 C5 7E06-2 I13
1246 H4 7E10-1 E9
1250 I3 7E10-2 F9
1255 I3 7E16 I11
1E03-1 I3 7E18 B12
1E03-2 G3 9E00 G5
1E03-3 H3 9E01 H5
1E04-1 F10 9E02 G5
1E04-2 E10 9E04 F5
1E04-3 E3 9E06 H9
1E05 A2 9E07 I8
1E07 G14 9E11 G5
1E10 I3 9E21 I12
2E05 G8 FE13 B4
2E07 G8 FE16 B6
2E08 H11 FE19 B9
2E11 A5 FE26 C10
2E21 D8 FE48 G4
2E22 G12 FE49 I3
2E23 G11 FE50 I3
2E26 C10 FE51 G4
2E27 E4 FE52 A6
2E28 F9 FE53 F10
2E34 F8 FE54 E3
2E46 C5 FE55 A5
2E47 E4 FE58 A4
2E49 E9 FE59 G13
2E52 G8 FE69 D10
2E64 C6 FEB2 C13
2E65 A6 FEB3 D13
2E66 G4 IE01 H10
2E67 H5 IE02 H9
2E68 G5 IE03 G5
2E69 F4 IE07 I12
2E71 I5 IE08 F6
2E72 I5 IE10 B12
2E76 H11 IE15 G11
2E78 H14 IE24 G8
2E79 I14 IE25 G8
2E81 H12 IE26 G5
2E92 I3 IE27 E5
2E93 I3 IE29 H5
2E94 H4 IE30 C11
2E95 F10 IE31 I5
2E96 E10 IE32 B13
2E99 C9 IE33 F9
2EB4 A4 IE34 F8
3E01 B6 IE35 F9
3E03 B7 IE38 I12
3E04-1 G8 IE57 D8
3E04-2 G8 IE60 I14
3E04-3 H8 IE61 I14
3E05 A4 IE62 E9
3E08 G12 IE68 D9
3E10 E4 IE70 H13
3E13 H9 IE89 H13
3E20 H10 IE90 H13
3E25 D9
3E29 E5
3E33 D10
3E35 C6
3E36 G4
3E40 G11
3E42 B7
3E46 C5
3E47 C11
3E48 F10
3E49 C11
3E50 F9
3E53 F10
3E56 F8
3E58 E8
3E60 E10
3E65 C12
3E66 B11
3E70 B13
3E71 B13
3E72 C13
3E82 B7
3E89 C7
3E90 B8
3E92 H4
3E95 I5
3E96 I4
3E97 I4
3E98 I5
3EA1 H14
3EA2 H13
3EA3 H13
3EA4 H12
3EA5 I14
3EA6 I13
3EB1 I13
3EB2 I13
3EB4 I11
3EB5 I12
5E02 H12
5E04 B10
5E05 B9
6E04 B4
6E05 A7
6E06 I4
6E11 B6
6E13 C10
6E15 C11
6E16 C13
6E17 B14
6E18 A4
6E38 H4

SSB: Analogue Externals C

B08C ANALOGUE EXTERNALS C



1000 F3
1002 E3
1003 D3
1004 C2
1005 B2
1006 B3
1007 A3
1010 F4
1E11-1 C2
1E11-2 C2
1E11-3 D2
1E14 B1
1E15 E2
1M36 B8
2E35 A3
2E36 B3
2E37 D3
2E39 F3
2E40 F4
2E42 C3
2E43 A4
2E45 D5
2E53 A7
2E54 B7
2E55 B7
2E56 B8
2E57 D8
2E58 D8
2E80 D5
2E97 C4
2E98 D4
3E26-1 E5
3E26-2 F5
3E26-3 F5
3E26-4 F5
3E74 A4
3E75 B4
3E76 C4
3E77 D4
3E78 D4
3E79 F3
3E80 F4
3E81 C4
3EC0 B8
3EC1 A8
5E00 C8
5E01 D8
6E20 A3
6E21 C3
6E41 B3
6E43 D3
6E44 E4
6E45 E3
9E13 A8
9E14 A8
FE17 D2
FE18 F3
FE20 B2
FE21 B2
FE22 C3
FE23 D3
FE24 F3
FE25 F4
FE56 A2
FE86 B7
FE87 B7
FE88 B7
FE89 B8
FE90 C8
FE91 D7
FE98 B8
IE58 C5
IE66 E5
IE67 F5
IE72 D5

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SSB: Analogue Externals D

B08D ANALOGUE EXTERNAL D

B08D

FOR FACTORY
USE ONLY

1HE0
5-147279-3
FE47 FE46 FE45 FE44 FE43 FE42 FE41 FE40 FE39 FE38
EJTAG-TRSTN EJTAG-DETECT EJTAG-TDI EJTAG-TDO EJTAG-TMS EJTAG-TCK
3E39-4 10K 3E39-2 10K 3E41-1 100K 3E39-1 10K +3V3

DEBUG / RS232 INTERFACE

+3V3-STANDBY 6E19 PMEG1020EA 9E09
9E08 6E50 PMEG1020EA FE99
7E17 ST3232C RS232
2E62 2E63 2E64 2E65 100n
IE85 IE86 IE87 IE88
IE75 IE76 2E60 2E61 100n

TXD-UP FEB9 9E03 IE81
TXD-MIPS IE82
RXD-MIPS IE79
RXD-UP FEC0 9E05 IE84 IE80
IE77
FE92 FE93 FE94 FE95 FE96 FE97
B4B-PH-SM4-TBT(LF) 1E50 TXD2 RXD2 UART2
1E51 TXD RXD UART1
B3B-PH-SM4-TBT(LF)
MIPS/STBY YKB21-5157N 1E06
1029 1008 FE57

UART
SERVICE
CONNECTOR

FOR
FACTORY
USE ONLY

TO ITV BOLT - ON MODULE

1R07
FE12 FE11 FE10 FE14 FE32 FE31 FE30 FE15
3E67 100R 3E00 100R
2E38 2E25 100p
AV1-B AV1-G AV1-R AV1-BLK-BO AV1-AUDIO-L AV1-AUDIO-R AV1-CVBS

1R08
B10P-PH-K-S
FE37 FE36 FE35 FE33 5E03 30R +3V3-STANDBY FEB4
3E09 3E23 3E83 3E84 3E86 3E57 100R
2E03 2E09 2E20 100p
RXD-UP TXD-UP SCL-SSB SDA-SSB RC BOLT-ON-IO STANDBY CVBS-TER-OUT
BOLT-ON-IO 3E87 10K +3V3

1HP0
SCL SDA
FE29 FE27 FE28 3E85 3E93 100R
SCL-SSB SDA-SSB

AV1-B AV1-G AV1-R AV1-CVBS
9EA1 9EA2 9EA3 9EA7
AV1-PB AV1-Y AV1-PR AV1-Y_CVBS

FOR MHP BOLT-ON

+5V 6E1 60R 2EAA 10u IEA1
2EA9 100n
7EA1 ADG734BRU SPDT SWITCH
MHP-SWITCH

BO-R AV1-R BO-B AV1-B BO-G AV1-G
2EA1 2EA2 2EA3 2EAP 2EAQ 2EA6 4u7
IEA2 IEA3 IEA4 IEA5 IEA6 IEA7
3EC2 3EC3 3EC4 3EC5 3EC6 3EC7 3EC8 3EC9 3ECA 3EAA 3EAB 3EAC 47K
AV1-Y
47K 3EAT IE78 2ECE 4u7 BO-CVBS
47K 3EB3 IE95 AV1-Y_CVBS
47K 3EC9 IE99 2EB6 4u7 AV1-CVBS
47K 3ED1
AV1-PB
AV1-PR

BO-AUDIO-R AV1-AUDIO-R BO-AUDIO-L AV1-AUDIO-L
3ECO-4 3ECO-3 3ECO-1 3ECO-2 3ECS-4 3ECS-3 3ECS-1 3ECS-2 33K
IEC4 IEC5 IEC6 IEC7
2EAC 2EAD 2EAE 2EAF 1u0
IEB1 IEB0 IEB5 IEB4
7EA3 74HC4053PW MDX
IEA8 2EAB 100n
AUDIO-IN1-R AUDIO-IN1-L
MHP-SWITCH 3E88 10K +3V3
9EA4 9EA5

FOR MHP BOLT-ON

1R12
BM14B-SRSS-TBT
FEA5 FEA6 FEA7 FEA8 FEB1 FEA9 FEB0 FEB5 FEB6 FEB7 FEB8
3ECF 3ECG 3ECH 100R
3ECE 68R
3EAY 3EAZ 1K0
BOLT-ON-IO RXD-UP TXD-UP SPDIF-IN1 BO-AUDIO-L BO-AUDIO-R BO-CVBS BO-R BO-G BO-B
RES 2ECB 2ECC 2ECD 100p 22p
2EAK 1u 2EAL 1n0
RES 2EAM 2EAN 100p

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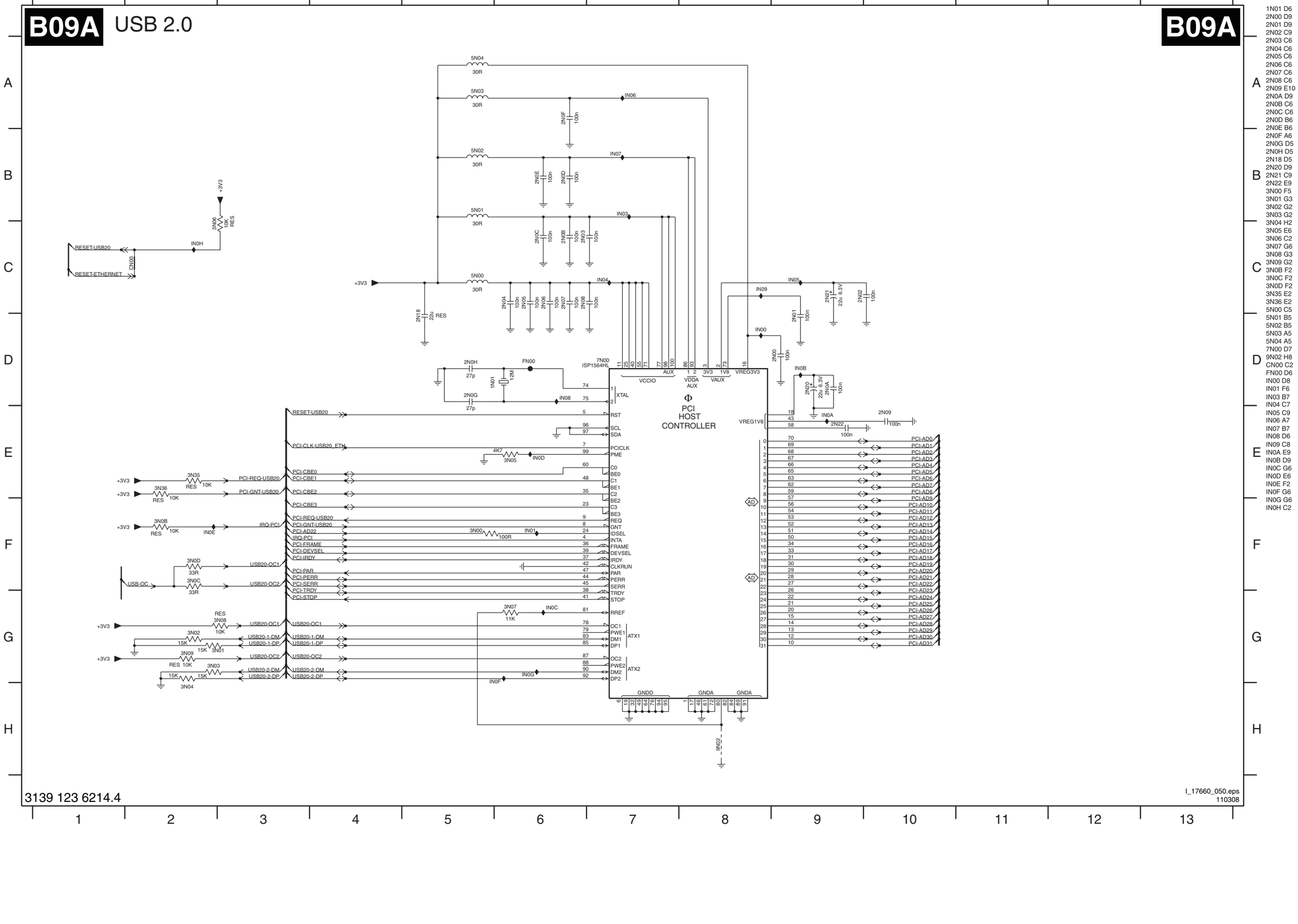
1008 F4 FE32 G1
1029 F4 FE33 H1
1E06 F5 FE34 H1
1E50 D5 FE35 H1
1E51 E5 FE36 H1
1HE0 B1 FE37 H1
1HP0 I1 FE38 C1
1R07 F1 FE39 C1
1R08 H1 FE40 C1
1R12 H8 FE41 C1
2E03 I1 FE42 B1
2E09 I1 FE43 B1
2E20 I2 FE44 B1
2E25 G2 FE45 B1
2E38 G1 FE46 B1
2E60 D3 FE47 B1
2E61 D3 FE57 F5
2E62 D2 FE92 D4
2E63 D2 FE93 E4
2EA1 C7 FE94 E4
2EA2 C7 FE95 E4
2EA3 C7 FE96 F4
2EA6 D7 FE97 F4
2EA9 B10 FE99 C3
2EAA B10 FEA5 H9
2EAB E11 FEA6 H9
2EAC E9 FEA7 H9
2EAD E9 FEA8 H9
2EAE F9 FEA9 H9
2EAF G9 FEB0 H9
2EAK I9 FEB1 H9
2EAL I10 FEB4 H2
2EAM I10 FEB5 I9
2EAN I10 FEB6 I9
2EAP C7 FEB7 I9
2EAQ C7 FEB8 I9
2EB6 D12 FEB9 D1
2ECB I9 FEC0 E1
2ECC I9 IE75 D3
2ECD I9 IE76 D3
2ECE C12 IE77 D3
3E00 G2 IE78 C12
3E09 H2 IE79 E3
3E23 H2 IE80 E2
3E39-1 B3 IE81 D2
3E39-2 B3 IE82 E1
3E39-4 B3 IE84 E1
3E41-1 B3 IE85 D2
3E57 H3 IE86 D2
3E67 G1 IE87 D2
3E83 H2 IE88 D2
3E84 H3 IE95 C12
3E85 I2 IE99 D12
3E86 H2 IEA1 B10
3E87 H4 IEA2 C9
3E88 G13 IEA3 C9
3E93 I2 IEA4 C9
3EAA D8 IEA5 C9
3EAB D9 IEA6 C9
3EAC D9 IEA7 D9
3EAT C12 IEA8 E10
3EAV C8 IEB0 E9
3EAY H10 IEB1 E9
3EAZ H10 IEB4 G9
3EB3 C11 IEB5 F9
3EC2 C8 IEC4 E8
3EC3 C8 IEC5 E8
3EC4 C9 IEC6 F9
3EC5 C9 IEC7 G9
3EC6 D8
3EC7 D8
3EC8 D8
3EC9 D11
3ECE H10
3ECF H10
3ECG H10
3ECH H10
3ECO-1 E8
3ECO-2 F9
3ECO-3 E8
3ECO-4 E8
3ECS-1 G8
3ECS-2 G8
3ECS-3 F8
3ECS-4 F8
3ED1 D11
3ED2 C8
5E03 H1
5EA1 B10
6E19 C3
6E50 C2
7E17 C2
7EA1 B10
7EA3 E10
9E03 D1
9E05 E1
9E08 C2
9E09 C3
9EA1 A10
9EA2 A10
9EA3 A10
9EA4 G10
9EA5 G10
9EA7 A10
FE10 G1
FE11 F1
FE12 F1
FE14 G2
FE15 G1
FE27 I1
FE28 I1
FE29 I1
FE30 G1
FE31 G1

SSB: USB 2.0

B09A USB 2.0

B09A



1N01 D6
2N00 D9
2N01 D9
2N02 C9
2N03 C6
2N04 C6
2N05 C6
2N06 C6
2N07 C6
2N08 C6
2N09 E10
2N0A D9
2N0B C6
2N0C C6
2N0D B6
2N0E B6
2N0F A6
2N0G D5
2N0H D5
2N18 D5
2N20 D9
2N21 C9
2N22 E9
3N00 F5
3N01 G3
3N02 G2
3N03 G2
3N04 H2
3N05 E6
3N06 C2
3N07 G6
3N08 G3
3N09 G2
3N0B F2
3N0C F2
3N0D F2
3N35 E2
3N36 E2
5N00 C5
5N01 B5
5N02 B5
5N03 A5
5N04 A5
7N00 D7
9N02 H8
CN00 C2
FN00 D6
IN00 D8
IN01 F6
IN03 B7
IN04 C7
IN05 C9
IN06 A7
IN07 B7
IN08 D6
IN09 C8
IN0A E9
IN0B D9
IN0C G6
IN0D E6
IN0E F2
IN0F G6
IN0G G6
IN0H C2

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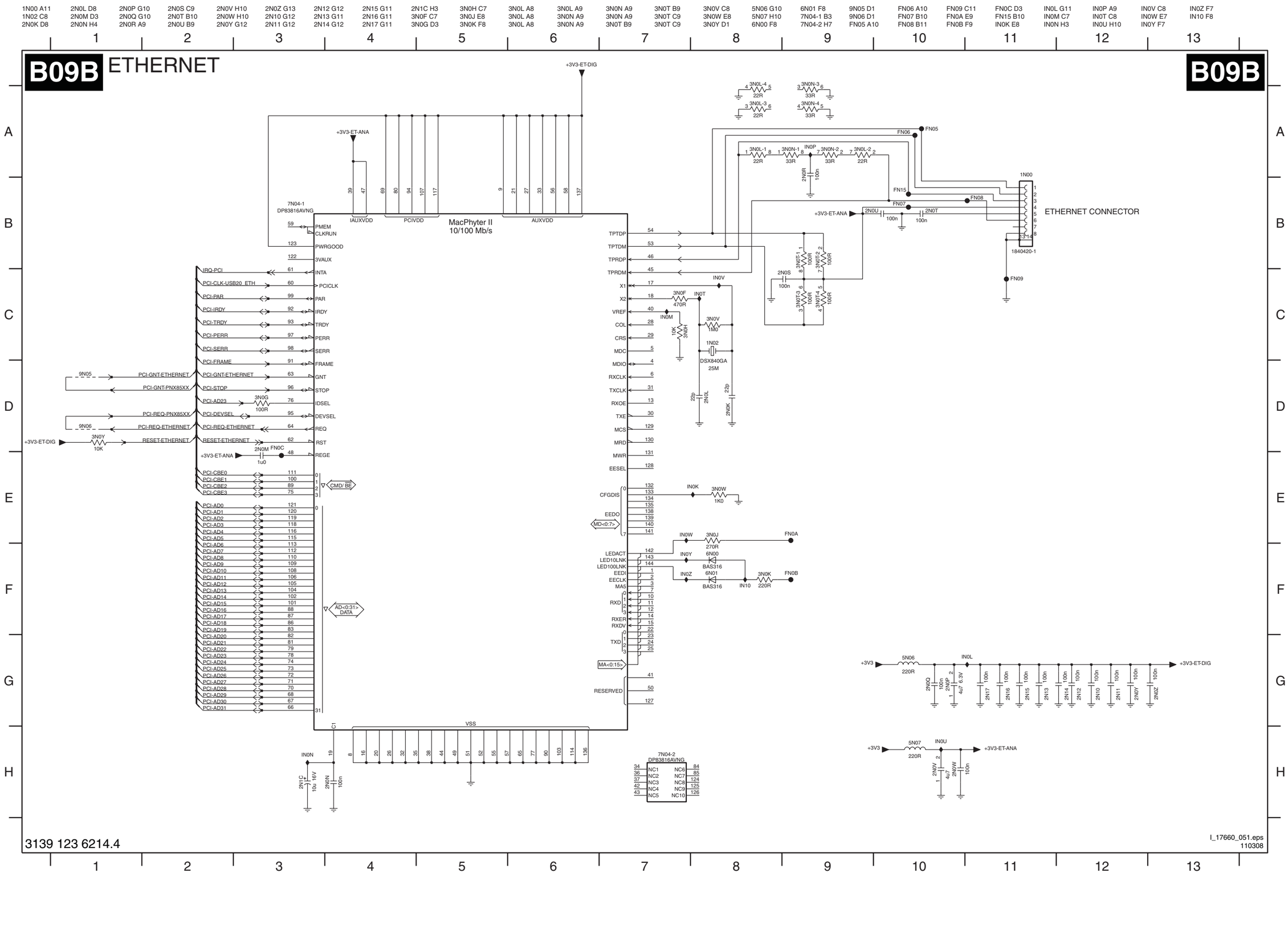
SSB: Ethernet

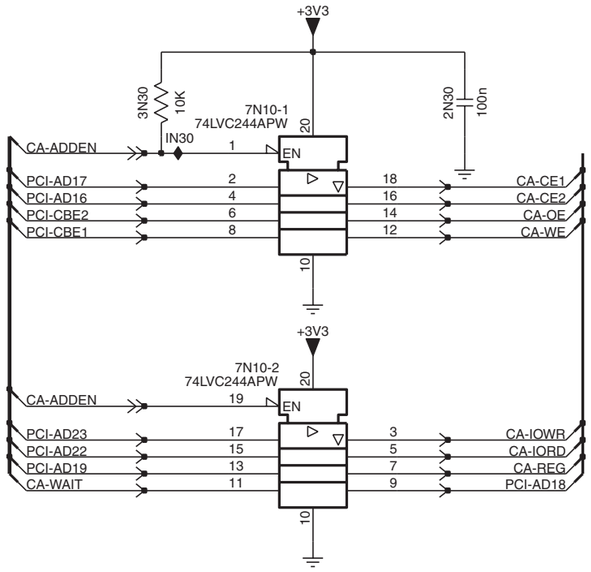


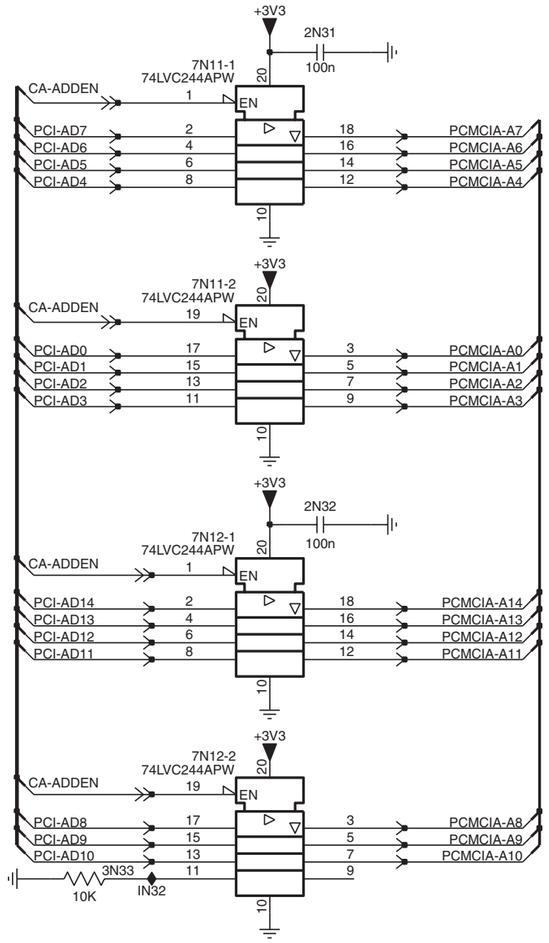
SSB: Buffering

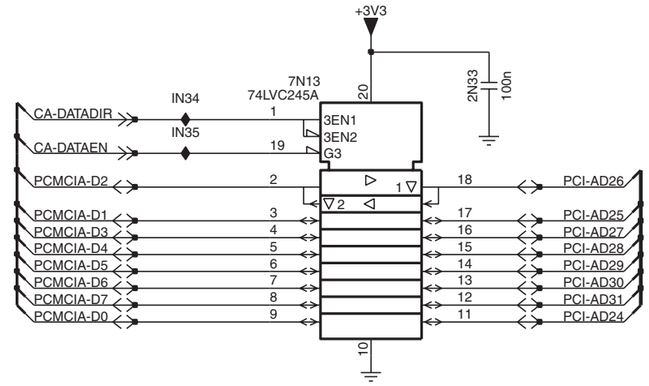
B09C BUFFERING

B09C

2N30 B3
2N31 A5
2N32 C5
2N33 A8
3N30 B1
3N33 D4
7N10-1 B2
7N10-2 C2
7N11-1 A4
7N11-2 B4
7N12-1 C4
7N12-2 D4
7N13 A7
IN30 B1
IN32 D4
IN34 A7
IN35 A7







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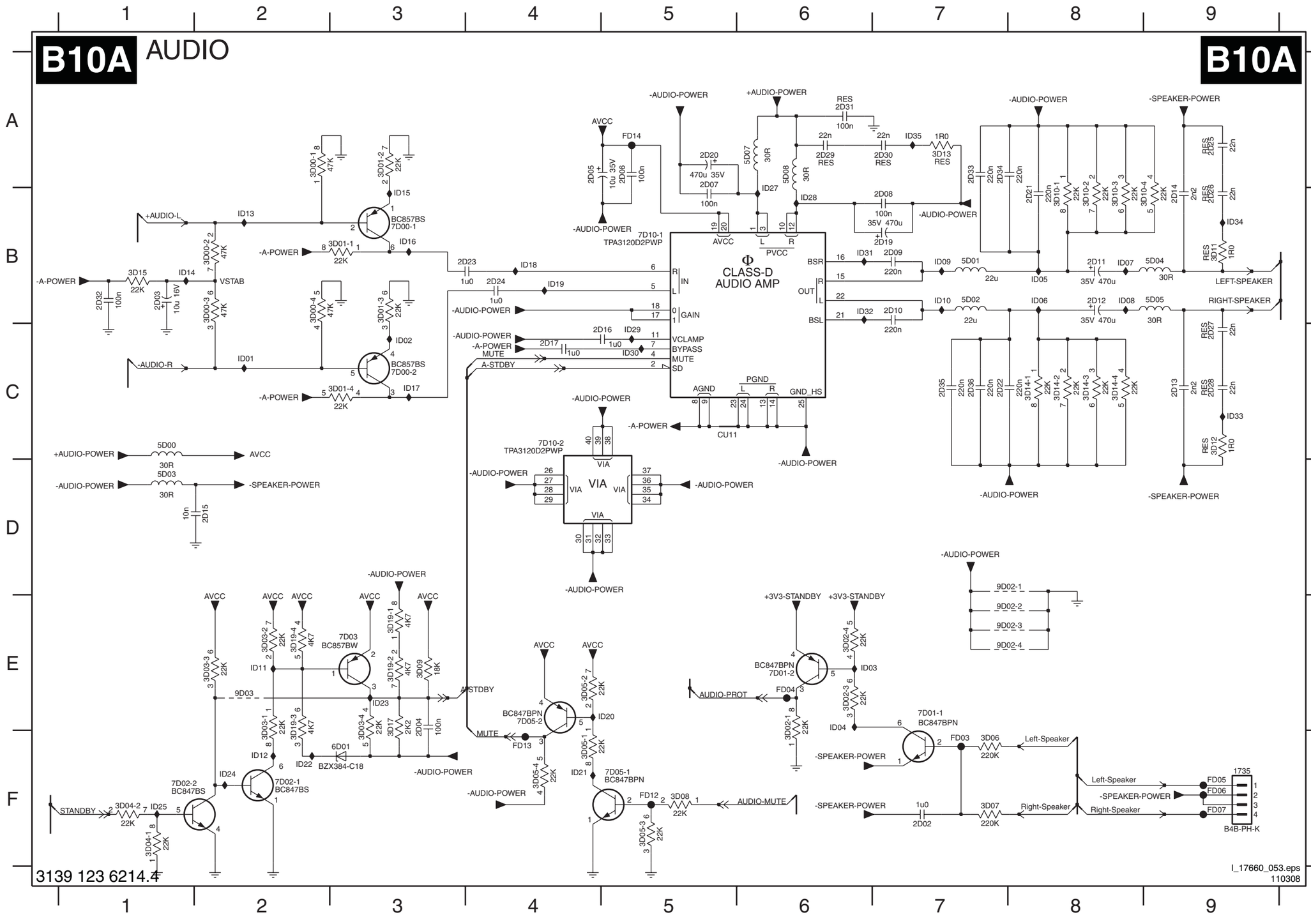
SSB: Audio

B10A AUDIO **B10A**



1735 F9	3D19-4 E2
2D02 F7	5D00 C1
2D03 B1	5D01 B7
2D04 E3	5D02 B7
2D05 A4	5D03 D1
2D06 A5	5D04 B9
2D07 A5	5D05 B9
2D08 B7	5D07 A6
2D09 B7	5D08 A6
2D10 B7	6D01 F3
2D11 B8	7D00-1 B3
2D12 B8	7D00-2 C3
2D13 C9	7D01-1 E7
2D14 B9	7D01-2 E6
2D15 D2	7D02-1 F2
2D16 C5	7D02-2 F1
2D17 C4	7D03 E3
2D19 B7	7D05-1 F5
2D20 A5	7D05-2 E4
2D21 B8	7D10-1 B5
2D22 C7	7D10-2 C4
2D23 B4	9D02-1 D8
2D24 B4	9D02-2 E8
2D25 A9	9D02-3 E8
2D26 B9	9D02-4 E8
2D27 C9	9D03 E2
2D28 C9	CU11 C5
2D29 A6	FD03 F7
2D30 A7	FD04 E6
2D31 A6	FD05 F9
2D32 B1	FD06 F9
2D33 A7	FD07 F9
2D34 A7	FD12 F5
2D35 C7	FD13 F4
2D36 C7	FD14 A5
3D00-1 A2	ID01 C2
3D00-2 B2	ID02 C3
3D00-3 B2	ID03 E6
3D00-4 B2	ID04 E6
3D01-1 B3	ID05 B8
3D01-2 A3	ID06 B8
3D01-3 B3	ID07 B8
3D01-4 C3	ID08 B8
3D02-1 E6	ID09 B7
3D02-3 E6	ID10 B7
3D02-4 E6	ID11 E2
3D03-1 E2	ID12 F2
3D03-2 E2	ID13 B2
3D03-3 E2	ID14 B1
3D03-4 E3	ID15 B3
3D04-1 F1	ID16 B3
3D04-2 F1	ID17 C3
3D05-1 F4	ID18 B4
3D05-2 E4	ID19 B4
3D05-3 F5	ID20 E5
3D05-4 F4	ID21 F4
3D06 F7	ID22 F2
3D07 F7	ID23 E3
3D08 F5	ID24 F2
3D09 E3	ID25 F1
3D10-1 B8	ID27 B6
3D10-2 B8	ID28 B6
3D10-3 B8	ID29 C5
3D10-4 B8	ID30 C5
3D11 B9	ID31 B6
3D12 C9	ID32 B6
3D13 A7	ID33 C9
3D14-1 C8	ID34 B9
3D14-2 C8	ID35 A7
3D14-3 C8	
3D14-4 C8	
3D15 B1	
3D17 E3	
3D19-1 E3	
3D19-2 E3	
3D19-3 E2	

SSB: SRP List Explanation

Example

Net Name	*Diagram*
+12-15V	AP1 (4x)
+12-15V	AP4 (4x)
+12-15V	AP5 (12x)
+12-15V	AP6 (4x)
+12-15V	AP7 (8x)
+12V	AP1 (4x)
+12V_NF	AP1 (2x)
+12VAL	AP1 (2x)
+25VLP	AP1 (4x)
+25VLP	AP2 (1x)
+3V3-STANDBY	AP5 (3x)
+400V-F	AP1 (2x)
+400V-F	AP2 (2x)
+400V-F	AP3 (2x)
+5V2	AP1 (6x)
+5V2	AP2 (1x)
+5V2-NF	AP1 (1x)
+5V2-NF	AP2 (1x)
+5V-SW	AP1 (6x)
+5V-SW	AP2 (1x)
+8V6	AP1 (3x)
+AUX	AP1 (2x)
+AUX	AP2 (1x)
+DC-F	AP1 (2x)
+DC-F	AP3 (2x)
+SUB-SPEAKER	AP5 (1x)
+SUB-SPEAKER	AP6 (2x)
-12-15V	AP1 (4x)
-12-15V	AP4 (6x)
-12-15V	AP5 (14x)
-12-15V	AP6 (6x)
-12-15V	AP7 (8x)
AL-OFF	AP1 (2x)
AUDIO-L	AP4 (1x)
AUDIO-L	AP5 (1x)
AUDIO-PROT	AP5 (3x)
AUDIO-R	AP4 (1x)
AUDIO-R	AP5 (1x)
AUDIO-SW	AP5 (1x)
AUDIO-SW	AP7 (1x)
BOOST	AP1 (2x)
CPROT	AP4 (2x)
CPROT	AP5 (1x)
CPROT-SW	AP5 (1x)
CPROT-SW	AP6 (2x)
-DC-F	AP1 (2x)
-DC-F	AP3 (2x)
DC-PROT	AP1 (1x)
DC-PROT	AP5 (2x)
DIM-CONTROL	AP1 (2x)
FEEDBACK+SW	AP6 (2x)
FEEDBACK-L	AP4 (2x)
FEEDBACK-R	AP4 (2x)
FEEDBACK-SW	AP6 (2x)
GND-AL	AP1 (2x)
GNDHA	AP1 (40x)
GNDHA	AP2 (20x)
GNDHA	AP3 (2x)
GNDHOT	AP3 (2x)
GND-L	AP1 (2x)
GND-L	AP4 (4x)
GND-L	AP5 (34x)
GND-LL	AP4 (7x)
GND-LL	AP5 (1x)
GND-LR	AP4 (7x)
GND-LR	AP5 (1x)
GND-LSW	AP5 (1x)
GND-LSW	AP6 (15x)
GND-S	AP1 (11x)
GND-SA	AP4 (8x)
GND-SA	AP5 (2x)
GND-SA	AP6 (8x)
GND-SA	AP7 (6x)
GNDscrew	AP3 (2x)
GNDscrew	AP5 (2x)
GND-SSB	AP5 (3x)
GND-SSP	AP1 (51x)
GND-SSP	AP2 (15x)
IN+SW	AP6 (2x)
IN-L	AP4 (2x)
IN-R	AP4 (2x)
IN-SW	AP6 (2x)
INV-MUTE	AP4 (1x)
INV-MUTE	AP5 (1x)
INV-MUTE	AP6 (1x)
LEFT-SPEAKER	AP4 (1x)
LEFT-SPEAKER	AP5 (1x)
MUTE	AP4 (2x)
MUTE	AP5 (1x)
MUTE	AP6 (2x)
ON-OFF	AP1 (3x)
OUT	AP6 (1x)
OUT	AP7 (2x)
OUTN	AP6 (1x)
OUTN	AP7 (1x)
POWER-GOOD	AP1 (2x)
POWER-OK-PLATFORM	AP1 (2x)
RIGHT-SPEAKER	AP4 (1x)
RIGHT-SPEAKER	AP5 (1x)
SOUND-ENABLE	AP5 (3x)
STANDBY	AP1 (5x)
STANDBY	AP2 (1x)
-SUB-SPEAKER	AP5 (1x)
-SUB-SPEAKER	AP6 (2x)
V-CLAMP	AP1 (1x)
V-CLAMP	AP3 (2x)

1.1. Introduction

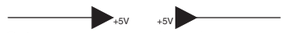
SRP (Service Reference Protocol) is a software tool that creates a list with all references to signal lines. The list contains references to the signals within all schematics of a PWB. It replaces the text references currently printed next to the signal names in the schematics. These printed references are created manually and are therefore not guaranteed to be 100% correct. In addition, in the current crowded schematics there is often none or very little place for these references.
Some of the PWB schematics will use SRP while others will still use the manual references. Either there will be an SRP reference list for a schematic, or there will be printed references in the schematic.

1.2. Non-SRP Schematics

There are several different signals available in a schematic:

1.2.1. Power Supply Lines

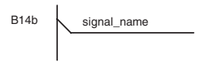
All power supply lines are available in the supply line overview (see chapter 6). In the schematics (see chapter 7) is not indicated where supplies are coming from or going to.
It is however indicated if a supply is incoming (created elsewhere), or outgoing (created or adapted in the current schematic).



Outgoing Incoming

1.2.2. Normal Signals

For normal signals, a schematic reference (e.g. B14b) is placed next to the signals.



1.2.3. Grounds

For normal and special grounds (e.g. GNDHOT or GND3V3 etc.), nothing is indicated.

1.3. SRP Schematics

SRP is a tool, which automatically creates a list with signal references, indicating on which schematic the signals are used.
A reference is created for all signals indicated with an SRP symbol, these symbols are:

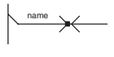
Power supply line.

Stand alone signal or switching line (used as less as possible).

Signal line into a wire tree.

Switching line into a wire tree.

Bi-directional line (e.g. SDA) into a wire tree.



Signal line into a wire tree, its direction depends on the circuit (e.g. ingoing for PDP, outgoing for LCD sets).

Remarks:

- When there is a black dot on the "signal direction arrow" it is an SRP symbol, so there will be a reference to the signal name in the SRP list.
- All references to normal grounds (Ground symbols without additional text) are not listed in the reference list, this to keep it concise.
- Signals that are not used in multiple schematics, but only once or several times in the same schematic, are included in the SRP reference list, but only with one reference.

Additional Tip:

When using the PDF service manual file, you can very easily search for signal names and follow the signal over all the schematics. In Adobe PDF reader:

- Select the signal name you want to search for, with the "Select text" tool.
- Copy and paste the signal name in the "Search PDF" tool.
- Search for all occurrences of the signal name.
- Now you can quickly jump between the different occurrences and follow the signal over all schematics. It is advised to "zoom in" to e.g. 150% to see clearly, which text is selected. Then you can zoom out, to get an overview of the complete schematic.

PS. It is recommended to use at least Adobe PDF (reader) version 6.x, due to better search possibilities in this version.

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Personal Notes:

SSB: SRP List Part 1

Netname	Diagram.
+12V	B01A
+12V	B01B
+12VD	B01B
+12VD	B04C
+12VD	B05H
+12VD	B06C
+12VD	B07B
+12VD	B08A
+12VD	B08B
+12VD	B08C
+1V2-PF	B06A
+1V2-PNX5100	B01C
+1V2-PNX5100	B04A
+1V2-PNX5100	B05C
+1V2-PNX5100-CLOCK	B05C
+1V2-PNX5100-DDR-PLL1	B05C
+1V2-PNX5100-DLL	B05C
+1V2-PNX5100-LVDS-PLL	B05C
+1V2-PNX5100-TRI-PLL1	B05C
+1V2-PNX5100-TRI-PLL2	B05C
+1V2-PNX5100-TRI-PLL3	B05C
+1V2-PNX8541	B01A
+1V2-PNX8541	B01B
+1V2-PNX8541	B02A
+1V2-PNX8541	B04A
+1V2-PNX8541	B04E
+1V2-PNX8541	B04P
+1V2-STANDBY	B01A
+1V2-STANDBY	B01B
+1V2-STANDBY	B04P
+1V8DVBC	B02C
+1V8-PNX5100	B05A
+1V8-PNX5100	B05C
+1V8-PNX5100	B06C
+1V8-PNX8541	B04G
+1V8-PNX8541	B04P
+1V8-PNX8541	B06C
+1VTMDS	B03E
+2V5	B01B
+2V5	B03A
+2V5	B03C
+2V5	B03E
+2V5-CLKGENA	B03E
+2V5M	B06A
+2V5-PF	B06A
+2V5-REF	B01B
+2V5-REF	B06C
+33VTUN	B01B
+33VTUN	B02B
+3V3	B01A
+3V3	B02A
+3V3	B02B
+3V3	B02C
+3V3	B03A
+3V3	B03B
+3V3	B03E
+3V3	B03F
+3V3	B04A
+3V3	B04L
+3V3	B04M
+3V3	B04P
+3V3	B04Q
+3V3	B05C
+3V3	B05E
+3V3	B05F
+3V3	B05G
+3V3	B05H
+3V3	B05I
+3V3	B06A
+3V3	B06B
+3V3	B07A
+3V3	B07E
+3V3	B08A
+3V3	B08B
+3V3	B08D
+3V3	B09A
+3V3	B09B
+3V3	B09C
+3V3_BUF	B07E
+3V3-ANA	B07E
+3V3-DIG	B07E
+3V3DVB	B02A
+3V3DVBC	B02C
+3V3-ET-ANA	B09B
+3V3-ET-DIG	B09B
+3V3F	B01A
+3V3F	B01B
+3V3F	B04G
+3V3F	B06C
+3V3M	B06A
+3V3-NAND	B04Q
+3V3-PER	B04C
+3V3-PER	B04E
+3V3-PER	B04P
+3V3-PNX5100-CLOCK	B05C
+3V3-PNX5100-DDR-PLL0	B05C
+3V3-PNX5100-LVDS-IN	B05C
+3V3-PNX5100-LVDS-PLL	B05C
+3V3-STANDBY	B01B
+3V3-STANDBY	B04A
+3V3-STANDBY	B04B
+3V3-STANDBY	B04D
+3V3-STANDBY	B04P
+3V3-STANDBY	B06B
+3V3-STANDBY	B07D
+3V3-STANDBY	B08D
+3V3-STANDBY	B10A
+3V3TMDS	B03D
+3V3TMDS	B03E
+5V	B01B
+5V	B01C
+5V	B04A
+5V	B04L
+5V	B06A
+5V	B06B
+5V	B07C
+5V	B07D
+5V	B07E
+5V	B08A
+5V	B08B
+5V	B08D
+5V_AUX	B07E
+5V_BUF	B07E
+5V5-TUN	B01C
+5V5-TUN	B04C
+5V-CON	B07D
+5V-CON	B07E
+5V-MUX	B07E
+5V-TUN	B02A
+5V-TUN	B02B
+5V-TUN	B04C
+AUDIO-L	B04I
+AUDIO-L	B10A
+AUDIO-POWER	B01B
+AUDIO-POWER	B04I
+AUDIO-POWER	B10A
+VCC-LM	B01B
+VDISP1	B05E
+VDISP1	B05H
+VDISP2	B05E
+VDISP2	B05H
+V-LM833	B06C
+VTUN	B02B
27MHZ-3V3	B03A
2V5-LMI	B03C
2V5-LMI	B03E
3V3-ST	B01A
3V3-ST	B01B
4-MHz	B02A (1x)
4-MHz	B02B (2x)
ADAC(1)	B04I (1x)
ADAC(1)	B04L (1x)
ADAC(2)	B04I (1x)
ADAC(2)	B04L (1x)
ADAC(3)	B04L (1x)
ADAC(3)	B04M (1x)
ADAC(4)	B04L (1x)
ADAC(4)	B04M (1x)
ADAC(5)	B04I (1x)
ADAC(5)	B04L (1x)
ADAC(6)	B04I (1x)
ADAC(6)	B04L (1x)
ADAC(7)	B04I (1x)
ADAC(7)	B04L (3x)
ADAC(8)	B04I (1x)
ADAC(8)	B04L (3x)
AGC-COMP	B02A (2x)
AIN-5V	B07D (3x)
ALE	B04A (2x)
ALE	B04B (1x)
AMBI-0	B05D (1x)
AMBI-0	B06A (1x)
AMBI-1	B05D (1x)
AMBI-1	B06A (1x)
AMBI-2	B05D (1x)
AMBI-2	B06A (1x)
AMBI-3	B05D (1x)
AMBI-3	B06A (1x)
AMBI-4	B05D (1x)
AMBI-4	B06A (1x)
AMBI-5	B05D (1x)
AMBI-5	B06A (1x)
AMBI-6	B05D (1x)
AMBI-6	B06A (1x)
AMBI-7	B05D (1x)
AMBI-7	B06A (1x)
AMBI-CLK	B05D (1x)
AMBI-CLK	B06A (1x)
AMBI-DE	B05D (1x)
AMBI-DE	B06A (1x)
AMBI-HS	B05D (1x)
AMBI-HS	B06A (1x)
AMBI-VS	B05D (1x)
AMBI-VS	B06A (1x)
A-PLOP	B04M (1x)
A-PLOP	B08A (1x)
A-PLOP	B08B (2x)
-A-POWER	B10A (5x)
AP-SCART-OUT-L	B08A (3x)
AP-SCART-OUT-R	B08A (3x)
ARX0-	B07D (1x)
ARX0-	B07E (1x)
ARX0+	B07D (1x)
ARX0+	B07E (1x)
ARX1-	B07D (1x)
ARX1-	B07E (1x)
ARX1+	B07D (1x)
ARX1+	B07E (1x)
ARX2-	B07D (1x)
ARX2-	B07E (1x)
ARX2+	B07D (1x)
ARX2+	B07E (1x)
ARXC-	B07D (1x)
ARXC-	B07E (1x)
ARXC+	B07D (1x)
ARXC+	B07E (1x)
ARX-DDC-SCL	B07D (2x)
ARX-DDC-SDA	B07D (2x)
ARX-HOTPLUG	B07D (2x)
ASEBRKn	B03A (1x)
ASEBRKn	B09F (1x)
A-STDBY	B10A (2x)
AUDIO-CL-L	B04I (1x)
AUDIO-CL-L	B08A (1x)
AUDIO-CL-R	B04I (1x)
AUDIO-CL-R	B08A (1x)
AUDIO-HDPH-L-AP	B04M (1x)
AUDIO-HDPH-L-AP	B08C (1x)
AUDIO-HDPH-R-AP	B04M (1x)
AUDIO-HDPH-R-AP	B08C (1x)
AUDIO-IN1-L	B04L (1x)
AUDIO-IN1-L	B08D (2x)
AUDIO-IN1-R	B04L (1x)
AUDIO-IN1-R	B08D (2x)
AUDIO-IN2-L	B04L (1x)
AUDIO-IN2-L	B08A (1x)
AUDIO-IN2-R	B04L (1x)
AUDIO-IN2-R	B08A (1x)
AUDIO-IN3-L	B04L (1x)
AUDIO-IN3-L	B08B (1x)
AUDIO-IN3-R	B04L (1x)
AUDIO-IN3-R	B08B (1x)
AUDIO-IN4-L	B04L (1x)
AUDIO-IN4-L	B07B (1x)
AUDIO-IN4-R	B04L (1x)
AUDIO-IN4-R	B07B (1x)
AUDIO-IN5-L	B04L (1x)
AUDIO-IN5-L	B08C (2x)
AUDIO-IN5-R	B04L (1x)
AUDIO-IN5-R	B08C (2x)
AUDIO-MUTE	B04A (1x)
AUDIO-MUTE	B10A (1x)
AUDIO-MUTE-UP	B04A (1x)
AUDIO-MUTE-UP	B04B (1x)
AUDIO-OUT-L	B04I (1x)
AUDIO-OUT-L	B08B (1x)
AUDIO-OUT-R	B04I (1x)
AUDIO-OUT-R	B08B (1x)
-AUDIO-POWER	B01B (1x)
-AUDIO-POWER	B04I (1x)
-AUDIO-POWER	B10A (17x)
AUDIO-PROT	B01A (1x)
AUDIO-PROT	B10A (1x)
-AUDIO-R	B04I (1x)
-AUDIO-R	B10A (1x)
AUDIO-VDD	B04I (7x)
AUDIO-VEE	B04I (5x)
AV1-AUDIO-L	B08A (1x)
AV1-AUDIO-L	B08D (3x)
AV1-AUDIO-R	B08A (1x)
AV1-AUDIO-R	B08D (3x)
AV1-B	B08A (1x)
AV1-B	B08D (2x)
AV1-BLK	B04A (1x)
AV1-BLK	B08A (1x)
AV1-BLK-BO	B08A (1x)
AV1-BLK-BO	B08D (1x)
AV1-CVBS	B08A (1x)
AV1-CVBS	B08D (2x)
AV1-G	B08A (1x)
AV1-G	B08D (2x)
AV1-PB	B04K (1x)
AV1-PB	B08D (1x)
AV1-PR	B04K (1x)
AV1-PR	B08D (1x)
AV1-R	B08A (1x)
AV1-R	B08D (2x)
AV1-STATUS	B04A (1x)
AV1-STATUS	B08A (1x)
AV1-Y	B04K (1x)
AV1-Y	B08D (1x)
AV1-Y_CVBS	B04K (1x)
AV1-Y_CVBS	B08B (1x)
AV1-Y_CVBS	B08D (1x)
AV2-BLK	B04A (1x)
AV2-BLK	B08A (1x)
AV2-C	B04K (1x)
AV2-STATUS	B04A (1x)
AV2-STATUS	B08A (1x)
AV2-Y_CVBS	B04K (1x)
AV2-Y_CVBS	B08A (1x)
AV2-Y_CVBS	B08B (1x)
AV3-PB	B04K (1x)
AV3-PB	B08A (1x)
AV3-PR	B04K (1x)
AV3-PR	B08A (1x)
AV3-Y	B04K (1x)
AV3-Y	B08A (1x)
AVCC	B10A (9x)
BACKLIGHT-BOOST	B01B (1x)
BACKLIGHT-BOOST	B05H (1x)
BACKLIGHT-CONTROL-FPGA-IN	B05H (1x)
BACKLIGHT-CONTROL-FPGA-IN	B06A (1x)
BACKLIGHT-CONTROL-FPGA-OUT	B05H (1x)
BACKLIGHT-CONTROL-FPGA-OUT	B06A (1x)
BACKLIGHT-CTRL	B05H (2x)
BACKLIGHT-OUT	B01B (1x)
BACKLIGHT-OUT	B05E (1x)
BACKLIGHT-OUT	B05H (1x)
BACKLIGHT-PWM-ANA-DISP	B01B (1x)
BACKLIGHT-PWM-ANA-DISP	B05H (1x)
BACKLIGHT-PWM-ANA-SSB	B05H (2x)
BIN-5V	B07D (3x)
BO-AUDIO-L	B08D (2x)
BO-AUDIO-R	B08D (2x)
BO-B	B08D (2x)
BO-CVBS	B08D (2x)
BO-G	B08D (2x)
BOLT-ON-IO	B04A (2x)
BOLT-ON-IO	B08D (2x)
BOOST-CTRL	B05H (3x)
BOOTMODE	B04E (2x)
BO-R	B08D (2x)
BRX0-	B07D (1x)
BRX0-	B07E (1x)
BRX0+	B07D (1x)
BRX0+	B07E (1x)
BRX1-	B07D (1x)
BRX1-	B07E (1x)
BRX1+	B07D (1x)
BRX1+	B07E (1x)
BRX2-	B07D (1x)
BRX2-	B07E (1x)
BRX2+	B07D (1x)
BRX2+	B07E (1x)
BRXC-	B07D (1x)
BRXC-	B07E (1x)
BRXC+	B07D (1x)
BRXC+	B07E (1x)
BRX-DDC-SCL	B07D (2x)
BRX-DDC-SDA	B07D (2x)
BRX-HOTPLUG	B07D (2x)
BUF-RST-TARGETn	B03A (1x)
BUF-RST-TARGETn	B03F (1x)
B-VGA	B04K (1x)
B-VGA	B08B (2x)
CA-ADDEN	B04N (1x)
CA-ADDEN	B09C (6x)
CA-CD1	B04N (1x)
CA-CD1	B07A (2x)
CA-CD2	B04N (1x)
CA-CD2	B07A (2x)
CA-CE1	B07A (1x)
CA-CE1	B09C (1x)
CA-CE2	B07A (1x)
CA-CE2	B09C (1x)
CA-DATADIR	B04N (1x)
CA-DATADIR	B09C (1x)
CA-DATAEN	B04N (1x)
CA-DATAEN	B09C (1x)
CA-INPACK	B07A (2x)
CA-IORD	B07A (1x)
CA-IORD	B09C (1x)
CA-IOWR	B07A (1x)
CA-IOWR	B09C (1x)
CA-MDI0	B03A (1x)
CA-MDI0	B04N (1x)
CA-MDI0	B07A (1x)
CA-MDI1	B03A (1x)
CA-MDI1	B04N (1x)
CA-MDI1	B07A (1x)
CA-MDI2	B03A (1x)
CA-MDI2	B04N (1x)
CA-MDI2	B07A (1x)
CA-MDI3	B03A (1x)
CA-MDI3	B04N (1x)
CA-MDI3	B07A (1x)
CA-MDI4	B03A (1x)
CA-MDI4	B04N (1x)
CA-MDI4	B07A (1x)
CA-MDI5	B03A (1x)
CA-MDI5	B04N (1x)
CA-MDI5	B07A (1x)
CA-MDI6	B03A (1x)
CA-MDI6	B04N (1x)
CA-MDI6	B07A (1x)
CA-MDI7	B03A (1x)
CA-MDI7	B04N (1x)
CA-MDI7	B07A (1x)
CA-MDO0	B03A (1x)
CA-MDO0	B04N (1x)
CA-MDO0	B07A (2x)
CA-MDO1	B03A (1x)
CA-MDO1	B04N (1x)
CA-MDO1	B07A (2x)
CA-MDO2	B03A (1x)
CA-MDO2	B04N (1x)
CA-MDO2	B07A (2x)
CA-MDO3	B03A (1x)
CA-MDO3	B04N (1x)
CA-MDO3	B07A (2x)
CA-MDO4	B03A (1x)
CA-MDO4	B04N (1x)
CA-MDO4	B07A (2x)
CA-MDO5	B03A (1x)
CA-MDO5	B04N (1x)
CA-MDO5	B07A (2x)
CA-MDO6	B03A (1x)
CA-MDO6	B04N (1x)
CA-MDO6	B07A (2x)
CA-MDO7	B03A (1x)
CA-MDO7	B04N (1x)
CA-MDO7	B07A (2x)
CA-MICLK	B03A (1x)
CA-MICLK	B04N (1x)
CA-MICLK	B07A (1x)
CA-MISTRT	B03A (1x)
CA-MISTRT	B04N (1x)
CA-MISTRT	B07A (1x)
CA-MIVAL	B03A (1x)
CA-MIVAL	B04N (1x)
CA-MIVAL	B07A (1x)
CA-MOCLK_VS2	B03A (1x)
CA-MOCLK_VS2	B04N (1x)
CA-MOCLK_VS2	B07A (2x)
CA-MOSTRT	B03A (1x)
CA-MOSTRT	B04N (1x)
CA-MOSTRT	B07A (2x)
CA-MOVAL	B03A (1x)
CA-MOVAL	B04N (1x)
CA-MOVAL	B07A (2x)
CA-OE	B07A (1x)
CA-OE	B09C (1x)
CA-REG	B07A (1x)
CA-REG	B09C (1x)
CA-RST	B04N (1x)
CA-RST	B07A (1x)
CA-VS1	B04N (1x)
CA-VS1	B07A (2x)
CA-WAIT	B07A (2x)
CA-WAIT	B09C (1x)
CA-WE	B07A (1x)
CA-WE	B09C (1x)
CCLK	B06A (3x)
CEC-HDMI	B04A (2x)
CEC-HDMI	B04H (1x)
CEC-HDMI	B07D (1x)
CIN-5V	B07D (3x)
CLK-OUT-PNX5100	B05F (1x)
CLK-OUT-PNX5100	B06A (1x)
CON12	B06A (2x)
CON13	B06A (2x)
CON14	B06A (2x)
CON15	B06A (2x)
CON16	B06A (2x)
CON17	B06A (2x)
CON18	B06A (2x)
CON19	B06A (2x)
CONTR+1V8-PNX8541	B04G (1x)
CONTR+1V8-PNX8541	B06C (1x)
CONTRAST-GAIN	B05H (1x)
CONTRAST-GAIN	B06A (1x)
CPU-27MHZ	B03A (2x)
CRX0-	B07D (1x)
CRX0-	B07E (1x)
CRX0+	B07D (1x)
CRX0+	B07E (1x)
CRX1-	B07D (1x)
CRX1-	B07E (1x)
CRX1+	B07D (1x)
CRX1+	B07E (1x)
CRX2-	B07D (1x)
CRX2-	B07E (1x)
CRX2+	B07D (1x)
CRX2+	B07E (1x)
CRXC-	B07D (1x)
CRXC-	B07E (1x)
CRXC+	B07D (1x)
CRXC+	B07E (1x)
CRX-DDC-SCL	B07D (2x)
CRX-DDC-SDA	B07D (2x)
CRX-HOTPLUG	B07D (2x)
CSO-B	B06A (4x)
CTRL1-FPGA	B05H (1x)
CTRL1-FPGA	B06A (2x)
CTRL1-PNX5100	B05H (2x)
CTRL2-FPGA	B05H (1x)
CTRL2-FPGA	B06A (2x)
CTRL2-PNX5100	B05H (2x)
CTRL3-FPGA	B05H (1x)
CTRL3-FPGA	B06A (2x)
CTRL3-PNX5100	B05H (2x)
CTRL4-FPGA	B05H (1x)
CTRL4-FPGA	B06A (2x)
CTRL4-PNX5100	B05H (2x)
CTRL5-FPGA	B06A (2x)
CTRL-DISP1	B05E (2x)
CTRL-DISP1	B05H (1x)
CTRL-DISP2	B05E (2x)
CTRL-DISP2	B05H (1x)
CTRL-DISP3	B05E (2x)
CTRL-DISP3	B05H (1x)
CTRL-DISP4	B05E (2x)
CTRL-DISP4	B05H (1x)
CVBS4	B02B (1x)
CVBS4	B04K (1x)
CVBS-MON-OUT-CINCH	B08B (2x)
CVBS-OUT-SC1	B08A (2x)
CVBS-TER-OUT	B02B (1x)
CVBS-TER-OUT	B08A (1x)
CVBS-TER-OUT	B08D (1x)
DDC-SCL	B04H (1x)
DDC-SCL	B07E (2x)
DDC-SDA	B04H (1x)
DDC-SDA	B07E (2x)
DDR2-A0	B04G (4x)
DDR2-A1	B04G (4x)
DDR2-A10	B04G (4x)
DDR2-A11	B04G (4x)
DDR2-A12	B04G (4x)
DDR2-A2	B04G (4x)
DDR2-A3	B04G (4x)
DDR2-A4	B04G (4x)
DDR2-A5	B04G (4x)
DDR2-A6	B04G (4x)
DDR2-A7	B04G (4x)
DDR2-A8	B04G (4x)
DDR2-A9	B04G (4x)
DDR2-BA0	B04G (4x)
DDR2-BA1	B04G (4x)
DDR2-CAS	B04G (4x)
DDR2-CKE	B04G (4x)
DDR2-CLK_N	B04G (4x)
DDR2-CLK_P	B04G (4x)
DDR2-CS	B04G (4x)
DDR2-D0	B04G (2x)
DDR2-D1	B04G (2x)
DDR2-D10	B04G (2x)
DDR2-D11	B04G (2x)
DDR2-D12	B04G (2x)
DDR2-D13	B04G (2x)
DDR2-D14	B04G (2x)
DDR2-D15	B04G (2x)
DDR2-D16	B04G (2x)
DDR2-D17	B04G (2x)
DDR2-D18	B04G (2x)
DDR2-D19	B04G (2x)
DDR2-D2	B04G (2x)
DDR2-D20	B04G (2x)
DDR2-D21	B04G (2x)
DDR2-D22	B04G (2x)
DDR2-D23	B04G (2x)
DDR2-D24	B04G (2x)
DDR2-D25	B04G (2x)
DDR2-D26	B04G (2x)
DDR2-D27	B04G (2x)
DDR2-D28	B04G (2x)
DDR2-D29	B04G (2x)
DDR2-D3	B04G (2x)
DDR2-D30	B04G (2x)
DDR2-D31	B04G (2x)
DDR2-D4	B04G (2x)
DDR2-D5	B04G (2x)
DDR2-D6	B04G (2x)
DDR2-D7	B04G (2x)
DDR2-D8	B04G (2x)
DDR2-D9	B04G (2x)
DDR2-DQM0	B04G (2x)
DDR2-DQM1	B04G (2x)
DDR2-DQM2	B04G (2x)
DDR2-DQM3	B04G (2x)
DDR2-DQS0_N	B04G (2x)
DDR2-DQS0_P	B04G (2x)
DDR2-DQS1_N	B04G (2x)
DDR2-DQS1_P	B04G (2x)
DDR2-DQS2_N	B04G (2x)
DDR2-DQS2_P	B04G (2x)
DDR2-DQS3_N	B04G (2x)
DDR2-DQS3_P	B04G (2x)
DDR2-ODT	B04G (4x)
DDR2-RAS	B04G (4x)
DDR2-VREF-CTRL	B04G (2x)
DDR2-VREF-DDR	B04G (3x)
DDR2-WE	B04G (4x)
DETECT1	B04A (1x)
DETECT1	B04B (1x)
DETECT-12V	B01B (1x)
DETECT-12V	B04A (1x)
DETECT2	B04A (1x)
DETECT2	B04B (1x)
DIF-N	B02B (1x)
DIF-N	B02C (1x)
DIF-P	B02B (1x)
DIF-P	B02C (1x)
DIN-5V	B07D (3x)
DONE	B06A (2x)
DRX0-	B07D (1x)
DRX0-	B07E (1x)
DRX0+	B07D (1x)
DRX0+	B07E (1x)
DRX1-	B07D (1x)
DRX1-	B07E (1x)
DRX1+	B07D (1x)
DRX1+	B07E (1x)
DRX2-	B07D (1x)
DRX2-	B07E (1x)
DRX2+	B07D (1x)
DRX2+	B07E (1x)
DRXC-	B07D (1x)
DRXC-	B07E (1x)
DRXC+	B07D (1x)
DRXC+	B07E (1x)
DRX-DDC-SCL	B07D (2x)
DRX-DDC-SDA	B07D (2x)
DRX-HOTPLUG	B07D (2x)
DV-B4_UV0	B04O (1x)
DV-B4_UV0	B05B (1x)
DV-B5_UV1	B04O (1x)
DV-B5_UV1	B05B (1x)
DV-B6_Y0	B04O (1x)
DV-B6_Y0	B05B (1x)
DV-B7_Y1	B04O (1x)
DV-B7_Y1	B05B (1x)
DV-CLK	B04O (1x)
DV-CLK	B05B (1x)
DV-FF_DE	B04O (1x)
DV-FF_DE	B05B (1x)
DV-G0_UV2	B04O (1x)
DV-G0_UV2	B05B (1x)
DV-G1_UV3	B04O (1x)
DV-G1_UV3	B05B (1x)
DV-G2_UV4	B04O (1x)
DV-G2_UV4	B05B (1x)
DV-G3_UV5	B04O (1x)
DV-G3_UV5	B05B (1x)
DV-G4_UV6	B04O (1x)
DV-G4_UV6	B05B (1x)
DV-G5_UV7	B04O (1x)
DV-G5_UV7	B05B (1x)
DV-G6_UV8	B04O (1x)
DV-G6_UV8	B05B (1x)
DV-G7_UV9	B04O (1x)
DV-G7_UV9	B05B (1x)
DV-HS	B04O (1x)
DV-HS	B05B (1x)
DV-R0_Y2	B04O (1x)
DV-R0_Y2	B05B (1x)
DV-R1_Y3	B04O (1x)
DV-R1_Y3	B05B (1x)
DV-R2_Y4	B04O (1x)
DV-R2_Y4	B05B (1x)
DV-R3_Y5	B04O (1x)
DV-R3_Y5	B05B (1x)
DV-R4_Y6	B04O (1x)
DV-R4_Y6	B05B (1x)
DV-R5_Y7	B04O (1x)
DV-R5_Y7	B05B (1x)
DV-R6_Y8	B04O (1x)
DV-R6_Y8	B05B (1x)
DV-R7_Y9	B04O (1x)
DV-R7_Y9	B05B (1x)
DV-VS	B04O (1x)
DV-VS	B05B (1x)
EA	B04A (2x)
EA	B04B (1x)
EJTAG-DETECT	B04B (1x)
EJTAG-DETECT	B08D (1x)
EJTAG-PNX5100-TCK	B05F (1x)
EJTAG-PNX5100-TCK	B05I (1x)
EJTAG-PNX5100-TDI	B05F (1x)
EJTAG-PNX5100-TDI	B05I (1x)
EJTAG-PNX5100-TDO	B05F (1x)
EJTAG-PNX5100-TDO	B05I (1x)
EJTAG-PNX5100-TMS	B05F (1x)
EJTAG-PNX5100-TMS	B05I (1x)
EJTAG-PNX5100-TRSTn	B05F (1x)
EJTAG-PNX5100-TRSTn	B05I (1x)
EJTAG-TCK	B04E (1x)
EJTAG-TCK	B08D (1x)
EJTAG-TDI	B04E (1x)
EJTAG-TDI	B08D (3x)
EJTAG-TDO	B04E (1x)
EJTAG-TDO	B08D (1x)
EJTAG-TMS	B04E (1x)
EJTAG-TMS	B08D (2x)
EJTAG-TRSTN	B04E (1x)
EJTAG-TRSTN	B08D (2x)
EMI-A1	B03A (1x)
EMI-A1	B03B (2x)
EMI-A10	B03A (1x)
EMI-A10	B03B (2x)
EMI-A11	B03B (2x)
EMI-A12	B03A (1x)
EMI-A12	B03B (2x)
EMI-A13	B03A (1x)
EMI-A13	B03B (2x)
EMI-A14	B03A (2x)
EMI-A14	B03B (2x)
EMI-A15	B03A (1x)
EMI-A15	B03B (2x)
EMI-A16	B03B (2x)
EMI-A17	B03B (2x)
EMI-A18	B03B (2x)
EMI-A19	B03B (2x)
EMI-A2	B03A (1x)
EMI-A2	B03B (2x)
EMI-A20	B03B (2x)
EMI-A21	B03B (2x)
EMI-A22	B03B (2x)
EMI-A3	B03A (1x)
EMI-A3	B03B (2x)
EMI-A4	B03A (1x)
EMI-A4	B03B (2x)
EMI-A5	B03A (1x)
EMI-A5	B03B (2x)
EMI-A6	B03A (1x)
EMI-A6	B03B (2x)
EMI-A7	B03A (1x)
EMI-A7	B03B (2x)
EMI-A8	B03A (1x)
EMI-A8	B03B (2x)
EMI-A9	B03A (1x)
EMI-A9	B03B (2x)
EMI-D0	B03B (2x)
EMI-D1	B03B (2x)
EMI-D10	B03B (2x)
EMI-D11	B03B (2x)
EMI-D12	B03B (2x)
EMI-D13	B03B (2x)
EMI-D14	B03B (2x)
EMI-D15	B03B (2x)
EMI-D2	B03B (2x)
EMI-D3	B03B (2x)
EMI-D4	B03B (2x)
EMI-D5	B03B (2x)
EMI-D6	B03B (2x)
EMI-D7	B03B (2x)
EMI-D8	B03B (2x)
EMI-D9	B03B (2x)
EMI-FLASH-CSn	B03B (3x)
EMI-OEn	B03B (3x)
EMI-RB-WAIT	B03B (1x)
EMI-WRn	B03B (2x)
ENABLE-1V2	B01A (1x)
ENABLE-1V2	B01C (1x)
ENABLE-1V2	B04B (1x)
ENABLE-3V3	B01A (1x)
ENABLE-3V3	B01C (1x)
ENABLE-3V3	B04B (1x)
FE-CLK	B02A (1x)
FE-CLK	B02C (1x)
FE-CLK	B04N (1x)
FE-DATA0	B02A (1x)
FE-DATA0	B02C (2x)
FE-DATA0	B04N (1x)
FE-DATA1	B02A (1x)
FE-DATA1	B02C (2x)
FE-DATA1	B04N (1x)
FE-DATA2	B02A (1x)
FE-DATA2	B02C (2x)
FE-DATA2	B04N (1x)
FE-DATA3	B02A (1x)
FE-DATA3	B02C (2x)
FE-DATA3	B04N (1x)
FE-DATA4	B02A (1x)
FE-DATA4	B02C (2x)
FE-DATA4	B04N (1x)
FE-DATA5	B02A (1x)
FE-DATA5	B02C (2x)
FE-DATA5	B04N (1x)
FE-DATA6	B02A (1x)
FE-DATA6	B02C (2x)
FE-DATA6	B04N (1x)
FE-DATA7	B02A (1x)
FE-DATA7	B02C (2x)
FE-DATA7	B04N (1x)
FE-ERR	B02A (1x)
FE-ERR	B04N (2x)
FE-SOP	B02A (1x)
FE-SOP	B02C (1x)
FE-SOP	B04N (1x)
FE-VALID	B02A (1x)
FE-VALID	B02C (1x)
FE-VALID	B04N (1x)
FRONT-C	B04K (1x)
FRONT-C	B08C (2x)
FRONT-Y_CVBS	B04K (1x)
FRONT-Y_CVBS	B08C (2x)
GND-SIG	B01A (14x)
GND-SIG1	B01C (14x)
G-VGA	B04K (1x)
G-VGA	B08B (2x)
HDMI-BUF-EN	B04B (1x)
HDMI-BUF-EN	B07E (1x)
HOT-PLUG	B04H (1x)
HOT-PLUG	B07D (4x)
H-SYNC-VGA	B04K (1x)
H-SYNC-VGA	B08B (1x)
IF-FILTN1	B02B (4x)
IF-FILTN2	B02B (3x)
IF-FILTN3	B02B (3x)
IF-FILTP1	B02B (4x)
IF-FILTP2	B02B (3x)
IF-FILTP3	B02B (3x)
IF-N	B02A (1x)
IF-N	B02B (1x)
IF-N	B02C (1x)
IF-N	B04K (1x)
IF-P	B02A (1x)
IF-P	B02B (1x)
IF-P	B02C (1x)
IF-P	B04K (1x)
IRQ-CA	B04E (2x)
IRQ-CA	B07A (2x)
IRQ-PCI	B04E (2x)
IRQ-PCI	B09A (2x)
IRQ-PCI	B09B (1x)

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SSB: SRP List Part 2

Netname	Diagram
JTAG-TCK-ST	B03A (2x)
JTAG-TCK-ST	B03F (1x)
JTAG-TCK-TDA10023	B02C (1x)
JTAG-TCK-TDA10048	B02A (1x)
JTAG-TDI-ST	B03A (2x)
JTAG-TDI-ST	B03F (1x)
JTAG-TDI-TDA10023	B02C (1x)
JTAG-TDI-TDA10048	B02A (1x)
JTAG-TDO-ST	B03A (2x)
JTAG-TDO-ST	B03F (1x)
JTAG-TDO-TDA10023	B02C (1x)
JTAG-TDO-TDA10048	B02A (1x)
JTAG-TMS-ST	B03A (2x)
JTAG-TMS-ST	B03F (1x)
JTAG-TMS-TDA10023	B02C (1x)
JTAG-TMS-TDA10048	B02A (1x)
JTAG-TRSTn-ST	B03A (2x)
JTAG-TRSTn-ST	B03F (1x)
JTAG-TRST-TDA10023	B02C (1x)
JTAG-TRST-TDA10048	B02A (1x)
KEYBOARD	B04A (2x)
KEYBOARD	B06B (1x)
LAMP-ON	B04A (1x)
LAMP-ON	B04B (1x)
LAMP-ON-OUT	B01B (1x)
LAMP-ON-OUT	B04A (1x)
LAMP-ON-OUT	B05E (1x)
LCD-PWR-ON	B05H (2x)
LED1	B04A (2x)
LED1	B06B (1x)
LED2	B04A (2x)
LED2	B06B (1x)
Left-Speaker	B10A (3x)
LIGHT-SENSOR	B04A (1x)
LIGHT-SENSOR	B06B (1x)
LMI-A(0)	B03C (3x)
LMI-A(1)	B03C (3x)
LMI-A(10)	B03C (3x)
LMI-A(11)	B03C (3x)
LMI-A(12)	B03C (3x)
LMI-A(2)	B03C (3x)
LMI-A(3)	B03C (3x)
LMI-A(4)	B03C (3x)
LMI-A(5)	B03C (3x)
LMI-A(6)	B03C (3x)
LMI-A(7)	B03C (3x)
LMI-A(8)	B03C (3x)
LMI-A(9)	B03C (3x)
LMI-BA0	B03C (3x)
LMI-BA1	B03C (3x)
LMI-CASnot	B03C (3x)
LMI-CLK	B03C (4x)
LMI-CLKEN	B03C (3x)
LMI-CLKnot	B03C (4x)
LMI-CSnot	B03C (3x)
LMI-D(0)	B03C (2x)
LMI-D(1)	B03C (2x)
LMI-D(10)	B03C (2x)
LMI-D(11)	B03C (2x)
LMI-D(12)	B03C (2x)
LMI-D(13)	B03C (2x)
LMI-D(14)	B03C (2x)
LMI-D(15)	B03C (2x)
LMI-D(16)	B03C (2x)
LMI-D(17)	B03C (2x)
LMI-D(18)	B03C (2x)
LMI-D(19)	B03C (2x)
LMI-D(2)	B03C (2x)
LMI-D(20)	B03C (2x)
LMI-D(21)	B03C (2x)
LMI-D(22)	B03C (2x)
LMI-D(23)	B03C (2x)
LMI-D(24)	B03C (2x)
LMI-D(25)	B03C (2x)
LMI-D(26)	B03C (2x)
LMI-D(27)	B03C (2x)
LMI-D(28)	B03C (2x)
LMI-D(29)	B03C (2x)
LMI-D(3)	B03C (2x)
LMI-D(30)	B03C (2x)
LMI-D(31)	B03C (2x)
LMI-D(4)	B03C (2x)
LMI-D(5)	B03C (2x)
LMI-D(6)	B03C (2x)
LMI-D(7)	B03C (2x)
LMI-D(8)	B03C (2x)
LMI-D(9)	B03C (2x)
LMI-DQM0	B03C (2x)
LMI-DQM1	B03C (2x)
LMI-DQM2	B03C (2x)
LMI-DQM3	B03C (2x)
LMI-DQS0	B03C (2x)
LMI-DQS1	B03C (2x)
LMI-DQS2	B03C (2x)
LMI-DQS3	B03C (2x)
LMI-RASnot	B03C (3x)
LMI-VREF	B03C (2x)
LMI-VREF2-ST	B03C (2x)
LMI-VREF-ST	B03C (2x)
LMI-WEnot	B03C (3x)
MDO0	B07A (4x)
MDO1	B07A (4x)
MDO2	B07A (4x)
MDO3	B07A (4x)
MDO4	B07A (4x)
MDO5	B07A (4x)
MDO6	B07A (4x)
MDO7	B07A (4x)
MHP-SWITCH	B04B (1x)
MHP-SWITCH	B08D (2x)
MISO	B06A (3x)
MOCLK_VS2	B07A (4x)
MOSI	B06A (3x)
MOSTRT	B07A (4x)
MOVAL	B07A (4x)
MPEG-DDC-SCLD	B03D (1x)
MPEG-DDC-SCLD	B07E (1x)
MPEG-DDC-SDAD	B03D (1x)
MPEG-DDC-SDAD	B07E (1x)
MPEG-TX0-	B03D (2x)
MPEG-TX0-	B07E (1x)
MPEG-TX0+	B03D (2x)
MPEG-TX0+	B07E (1x)
MPEG-TX1-	B03D (2x)
MPEG-TX1-	B07E (1x)
MPEG-TX1+	B03D (2x)
MPEG-TX1+	B07E (1x)
MPEG-TX2-	B03D (2x)
MPEG-TX2-	B07E (1x)
MPEG-TX2+	B03D (2x)
MPEG-TX2+	B07E (1x)
MPEG-TXC-	B03D (2x)
MPEG-TXC-	B07E (1x)
MPEG-TXC+	B03D (2x)
MPEG-TXC+	B07E (1x)
MUTE	B10A (2x)
NAND-AD(0)	B04Q (2x)
NAND-AD(1)	B04Q (2x)
NAND-AD(2)	B04Q (2x)
NAND-AD(3)	B04Q (2x)
NAND-AD(4)	B04Q (2x)
NAND-AD(5)	B04Q (2x)
NAND-AD(6)	B04Q (2x)
NAND-AD(7)	B04Q (2x)
NAND-ALE	B04Q (2x)
NAND-CLE	B04Q (2x)
NAND-REn	B04Q (2x)
NAND-WEn	B04Q (2x)
P0.0	B04A (2x)
P0.0	B04B (1x)
P0.1	B04A (2x)
P0.1	B04B (1x)
P0.2	B04A (2x)
P0.2	B04B (1x)
P0.3	B04A (2x)
P0.3	B04B (1x)
P0.4	B04A (2x)
P0.4	B04B (1x)
P0.5	B04A (2x)
P0.5	B04B (1x)
P0.6	B04A (2x)
P0.6	B04B (1x)
P0.7	B04A (2x)
P0.7	B04B (1x)
P2.0	B04A (2x)
P2.0	B04B (1x)
P2.1	B04A (2x)
P2.1	B04B (1x)
P2.2	B04A (2x)
P2.2	B04B (1x)
P2.3	B04A (2x)
P2.3	B04B (1x)
P2.4	B04A (2x)
P2.4	B04B (1x)
P2.5	B04A (2x)
P2.5	B04B (1x)
P2.6	B04A (2x)
P2.6	B04B (1x)
P2.7	B04A (2x)
P2.7	B04B (1x)
PARX-DDC-SCL	B07D (1x)
PARX-DDC-SCL	B07E (1x)
PARX-DDC-SDA	B07D (1x)
PARX-DDC-SDA	B07E (1x)
PBRX-DDC-SCL	B07D (1x)
PBRX-DDC-SCL	B07E (1x)
PBRX-DDC-SDA	B07D (1x)
PBRX-DDC-SDA	B07E (1x)
PCEC-HDMI	B07D (5x)
PCI-AD0	B04F (1x)
PCI-AD0	B04Q (1x)
PCI-AD0	B05G (1x)
PCI-AD0	B09A (1x)
PCI-AD0	B09B (1x)
PCI-AD0	B09C (1x)
PCI-AD1	B04F (1x)
PCI-AD1	B04Q (1x)
PCI-AD1	B05G (1x)
PCI-AD1	B09A (1x)
PCI-AD1	B09B (1x)
PCI-AD1	B09C (1x)
PCI-AD10	B04F (1x)
PCI-AD10	B05G (1x)
PCI-AD10	B09A (1x)
PCI-AD10	B09B (1x)
PCI-AD10	B09C (1x)
PCI-AD11	B04F (1x)
PCI-AD11	B05G (1x)
PCI-AD11	B09A (1x)
PCI-AD11	B09B (1x)
PCI-AD11	B09C (1x)
PCI-AD12	B04F (1x)
PCI-AD12	B05G (1x)
PCI-AD12	B09A (1x)
PCI-AD12	B09B (1x)
PCI-AD12	B09C (1x)
PCI-AD13	B04F (1x)
PCI-AD13	B05G (1x)
PCI-AD13	B09A (1x)
PCI-AD13	B09B (1x)
PCI-AD13	B09C (1x)
PCI-AD14	B04F (1x)
PCI-AD14	B05G (1x)
PCI-AD14	B09A (1x)
PCI-AD14	B09B (1x)
PCI-AD14	B09C (1x)
PCI-AD15	B04F (1x)
PCI-AD15	B05G (1x)
PCI-AD15	B09A (1x)
PCI-AD15	B09B (1x)
PCI-AD16	B04F (1x)
PCI-AD16	B05G (1x)
PCI-AD16	B09A (1x)
PCI-AD16	B09B (1x)
PCI-AD16	B09C (1x)
PCI-AD17	B04F (1x)
PCI-AD17	B05G (1x)
PCI-AD17	B09A (1x)
PCI-AD17	B09B (1x)
PCI-AD17	B09C (1x)
PCI-AD18	B04F (1x)
PCI-AD18	B05G (1x)
PCI-AD18	B09A (1x)
PCI-AD18	B09B (1x)
PCI-AD18	B09C (1x)
PCI-AD19	B04F (1x)
PCI-AD19	B05G (1x)
PCI-AD19	B09A (1x)
PCI-AD19	B09B (1x)
PCI-AD19	B09C (1x)
PCI-AD2	B04F (1x)
PCI-AD2	B05G (1x)
PCI-AD2	B09A (1x)
PCI-AD2	B09B (1x)
PCI-AD2	B09C (1x)
PCI-AD20	B04F (1x)
PCI-AD20	B05G (1x)
PCI-AD20	B09A (1x)
PCI-AD20	B09B (1x)
PCI-AD21	B04F (1x)
PCI-AD21	B05G (1x)
PCI-AD21	B09A (1x)
PCI-AD21	B09B (1x)
PCI-AD22	B04F (1x)
PCI-AD22	B05G (1x)
PCI-AD22	B09A (2x)
PCI-AD22	B09B (1x)
PCI-AD22	B09C (1x)
PCI-AD23	B04F (1x)
PCI-AD23	B05G (1x)
PCI-AD23	B09A (1x)
PCI-AD23	B09B (2x)
PCI-AD23	B09C (1x)
PCI-AD24	B04F (2x)
PCI-AD24	B04Q (1x)
PCI-AD24	B05G (1x)
PCI-AD24	B09A (1x)
PCI-AD24	B09B (1x)
PCI-AD24	B09C (1x)
PCI-AD25	B04F (1x)
PCI-AD25	B04Q (1x)
PCI-AD25	B05G (2x)
PCI-AD25	B09A (1x)
PCI-AD25	B09B (1x)
PCI-AD25	B09C (1x)
PCI-AD26	B04F (1x)
PCI-AD26	B04Q (1x)
PCI-AD26	B05G (1x)
PCI-AD26	B09A (1x)
PCI-AD26	B09B (1x)
PCI-AD26	B09C (1x)
PCI-AD27	B04F (1x)
PCI-AD27	B04Q (1x)
PCI-AD27	B05G (1x)
PCI-AD27	B09A (1x)
PCI-AD27	B09B (1x)
PCI-AD27	B09C (1x)
PCI-AD28	B04F (1x)
PCI-AD28	B04Q (1x)
PCI-AD28	B05G (1x)
PCI-AD28	B09A (1x)
PCI-AD28	B09B (1x)
PCI-AD28	B09C (1x)
PCI-AD29	B04F (1x)
PCI-AD29	B04Q (1x)
PCI-AD29	B05G (1x)
PCI-AD29	B09A (1x)
PCI-AD29	B09B (1x)
PCI-AD29	B09C (1x)
PCI-AD3	B04F (1x)
PCI-AD3	B05G (1x)
PCI-AD3	B09A (1x)
PCI-AD3	B09B (1x)
PCI-AD3	B09C (1x)
PCI-AD30	B04F (1x)
PCI-AD30	B04Q (1x)
PCI-AD30	B05G (1x)
PCI-AD30	B09A (1x)
PCI-AD30	B09B (1x)
PCI-AD30	B09C (1x)
PCI-AD31	B04F (1x)
PCI-AD31	B04Q (1x)
PCI-AD31	B05G (1x)
PCI-AD31	B09A (1x)
PCI-AD31	B09B (1x)
PCI-AD31	B09C (1x)
PCI-AD4	B04F (1x)
PCI-AD4	B05G (1x)
PCI-AD4	B09A (1x)
PCI-AD4	B09B (1x)
PCI-AD4	B09C (1x)
PCI-AD5	B04F (1x)
PCI-AD5	B05G (1x)
PCI-AD5	B09A (1x)
PCI-AD5	B09B (1x)
PCI-AD5	B09C (1x)
PCI-AD6	B04F (1x)
PCI-AD6	B05G (1x)
PCI-AD6	B09A (1x)
PCI-AD6	B09B (1x)
PCI-AD6	B09C (1x)
PCI-AD7	B04F (1x)
PCI-AD7	B05G (1x)
PCI-AD7	B09A (1x)
PCI-AD7	B09B (1x)
PCI-AD7	B09C (1x)
PCI-AD8	B04F (1x)
PCI-AD8	B05G (1x)
PCI-AD8	B09A (1x)
PCI-AD8	B09B (1x)
PCI-AD8	B09C (1x)
PCI-AD9	B04F (1x)
PCI-AD9	B05G (1x)
PCI-AD9	B09A (1x)
PCI-AD9	B09B (1x)
PCI-AD9	B09C (1x)
PCI-CBE0	B04F (1x)
PCI-CBE0	B05G (1x)
PCI-CBE0	B09A (1x)
PCI-CBE0	B09B (1x)
PCI-CBE1	B04F (1x)
PCI-CBE1	B04Q (1x)
PCI-CBE1	B05G (1x)
PCI-CBE1	B09A (1x)
PCI-CBE1	B09B (1x)
PCI-CBE1	B09C (1x)
PCI-CBE2	B04F (1x)
PCI-CBE2	B04Q (1x)
PCI-CBE2	B05G (1x)
PCI-CBE2	B09A (1x)
PCI-CBE2	B09B (1x)
PCI-CBE2	B09C (1x)
PCI-CBE3	B04F (1x)
PCI-CBE3	B05G (1x)
PCI-CBE3	B09A (1x)
PCI-CBE3	B09B (1x)
PCI-CLK-ETHERNET	B04E (2x)
PCI-CLK-OUT	B04E (3x)
PCI-CLK-PNX5100	B04E (2x)
PCI-CLK-PNX5100	B05G (1x)
PCI-CLK-PNX8535	B04E (2x)
PCI-CLK-PNX8535	B04F (1x)
PCI-CLK-USB20_ETH	B04E (2x)
PCI-CLK-USB20_ETH	B09A (1x)
PCI-CLK-USB20_ETH	B09B (1x)
PCI-DEVSEL	B04F (2x)
PCI-DEVSEL	B05G (1x)
PCI-DEVSEL	B09A (1x)
PCI-DEVSEL	B09B (1x)
PCI-FRAME	B04F (2x)
PCI-FRAME	B05G (1x)
PCI-FRAME	B09A (1x)
PCI-FRAME	B09B (1x)
PCI-GNT	B04F (2x)
PCI-GNT-B	B04F (2x)
PCI-GNT-ETHERNET	B05G (1x)
PCI-GNT-ETHERNET	B09B (2x)
PCI-GNT-PNX85XX	B04F (1x)
PCI-GNT-PNX85XX	B05G (1x)
PCI-GNT-PNX85XX	B09B (1x)
PCI-GNT-USB20	B04F (1x)
PCI-GNT-USB20	B05G (1x)
PCI-GNT-USB20	B09A (2x)
PCI-IRDY	B04F (2x)
PCI-IRDY	B05G (1x)
PCI-IRDY	B09A (1x)
PCI-IRDY	B09B (1x)
PCI-PAR	B04F (1x)
PCI-PAR	B05G (1x)
PCI-PAR	B09A (1x)
PCI-PAR	B09B (1x)
PCI-PERR	B04F (2x)
PCI-PERR	B05G (1x)
PCI-PERR	B09A (1x)
PCI-PERR	B09B (1x)
PCI-REQ	B04F (2x)
PCI-REQ-B	B04F (2x)
PCI-REQ-ETHERNET	B05G (1x)
PCI-REQ-ETHERNET	B09B (2x)
PCI-REQ-PNX85XX	B04F (1x)
PCI-REQ-PNX85XX	B05G (1x)
PCI-REQ-PNX85XX	B09B (1x)
PCI-REQ-USB20	B04F (1x)
PCI-REQ-USB20	B05G (1x)
PCI-REQ-USB20	B09A (2x)
PCI-SERR	B04F (2x)
PCI-SERR	B05G (1x)
PCI-SERR	B09A (1x)
PCI-SERR	B09B (1x)
PCI-STOP	B04F (2x)
PCI-STOP	B05G (1x)
PCI-STOP	B09A (1x)
PCI-STOP	B09B (1x)
PCI-TRDY	B04F (2x)
PCI-TRDY	B05G (1x)
PCI-TRDY	B09A (1x)
PCI-TRDY	B09B (1x)
PCMCIA-A0	B07A (1x)
PCMCIA-A0	B09C (1x)
PCMCIA-A1	B07A (1x)
PCMCIA-A1	B09C (1x)
PCMCIA-A10	B07A (1x)
PCMCIA-A10	B09C (1x)
PCMCIA-A11	B07A (1x)
PCMCIA-A11	B09C (1x)
PCMCIA-A12	B07A (1x)
PCMCIA-A12	B09C (1x)
PCMCIA-A13	B07A (1x)
PCMCIA-A13	B09C (1x)
PCMCIA-A14	B07A (1x)
PCMCIA-A14	B09C (1x)
PCMCIA-A2	B07A (1x)
PCMCIA-A2	B09C (1x)
PCMCIA-A3	B07A (1x)
PCMCIA-A3	B09C (1x)
PCMCIA-A4	B07A (1x)
PCMCIA-A4	B09C (1x)
PCMCIA-A5	B07A (1x)
PCMCIA-A5	B09C (1x)
PCMCIA-A6	B07A (1x)
PCMCIA-A6	B09C (1x)
PCMCIA-A7	B07A (1x)
PCMCIA-A7	B09C (1x)
PCMCIA-A8	B07A (1x)
PCMCIA-A8	B09C (1x)
PCMCIA-A9	B07A (1x)
PCMCIA-A9	B09C (1x)
PCMCIA-D0	B07A (1x)
PCMCIA-D0	B09C (1x)
PCMCIA-D1	B07A (1x)
PCMCIA-D1	B09C (1x)
PCMCIA-D2	B07A (1x)
PCMCIA-D2	B09C (1x)
PCMCIA-D3	B07A (1x)
PCMCIA-D3	B09C (1x)
PCMCIA-D4	B07A (1x)
PCMCIA-D4	B09C (1x)
PCMCIA-D5	B07A (1x)
PCMCIA-D5	B09C (1x)
PCMCIA-D6	B07A (1x)
PCMCIA-D6	B09C (1x)
PCMCIA-D7	B07A (1x)
PCMCIA-D7	B09C (1x)
PCMCIA-VCC-VPP	B07A (4x)
PCMOUT2	B03A (1x)
PCMOUT2	B03D (1x)
PCMOUT3	B03A (1x)
PCMOUT3	B03D (1x)
PCMOUT4	B03A (1x)
PCMOUT4	B03D (1x)
PCRX-DDC-SCL	B07D (1x)
PCRX-DDC-SCL	B07E (1x)
PCRX-DDC-SDA	B07D (1x)
PCRX-DDC-SDA	B07E (1x)
PDRX-DDC-SCL	B07D (1x)
PDRX-DDC-SCL	B07E (1x)
PDRX-DDC-SDA	B07D (1x)
PDRX-DDC-SDA	B07E (1x)
PNX5100-DDR2-A0	B05A (3x)
PNX5100-DDR2-A1	B05A (3x)
PNX5100-DDR2-A10	B05A (3x)
PNX5100-DDR2-A11	B05A (3x)
PNX5100-DDR2-A12	B05A (3x)
PNX5100-DDR2-A2	B05A (3x)
PNX5100-DDR2-A3	B05A (3x)
PNX5100-DDR2-A4	B05A (3x)
PNX5100-DDR2-A5	B05A (3x)
PNX5100-DDR2-A6	B05A (3x)
PNX5100-DDR2-A7	B05A (3x)
PNX5100-DDR2-A8	B05A (3x)
PNX5100-DDR2-A9	B05A (3x)
PNX5100-DDR2-BA0	B05A (3x)
PNX5100-DDR2-BA1	B05A (3x)
PNX5100-DDR2-CAS	B05A (3x)
PNX5100-DDR2-CKE	B05A (3x)
PNX5100-DDR2-CLK_N	B05A (3x)
PNX5100-DDR2-CLK_P	B05A (3x)
PNX5100-DDR2-CS	B05A (3x)
PNX5100-DDR2-D0	B05A (2x)
PNX5100-DDR2-D1	B05A (2x)
PNX5100-DDR2-D10	B05A (2x)
PNX5100-DDR2-D11	B05A (2x)
PNX5100-DDR2-D12	B05A (2x)
PNX5100-DDR2-D13	B05A (2x)
PNX5100-DDR2-D14	B05A (2x)
PNX5100-DDR2-D15	B05A (2x)
PNX5100-DDR2-D16	B05A (2x)
PNX5100-DDR2-D17	B05A (2x)
PNX5100-DDR2-D18	B05A (2x)
PNX5100-DDR2-D19	B05A (2x)
PNX5100-DDR2-D2	B05A (2x)
PNX5100-DDR2-D20	B05A (2x)
PNX5100-DDR2-D21	B05A (2x)
PNX5100-DDR2-D22	B05A (2x)
PNX5100-DDR2-D23	B05A (2x)
PNX5100-DDR2-D24	B05A (2x)
PNX5100-DDR2-D25	B05A (2x)
PNX5100-DDR2-D26	B05A (2x)
PNX5100-DDR2-D27	B05A (2x)
PNX5100-DDR2-D28	B05A (2x)
PNX5100-DDR2-D29	B05A (2x)
PNX5100-DDR2-D3	B05A (2x)
PNX5100-DDR2-D30	B05A (2x)
PNX5100-DDR2-D31	B05A (2x)
PNX5100-DDR2-D4	B05A (2x)
PNX5100-DDR2-D5	B05A (2x)
PNX5100-DDR2-D6	B05A (2x)
PNX5100-DDR2-D7	B05A (2x)
PNX5100-DDR2-D8	B05A (2x)
PNX5100-DDR2-D9	B05A (2x)
PNX5100-DDR2-DQM0	B05A (2x)
PNX5100-DDR2-DQM1	B05A (2x)
PNX5100-DDR2-DQM2	B05A (2x)
PNX5100-DDR2-DQM3	B05A (2x)
PNX5100-DDR2-DQS0_N	B05A (2x)
PNX5100-DDR2-DQS0_P	B05A (2x)
PNX5100-DDR2-DQS1_N	B05A (2x)
PNX5100-DDR2-DQS1_P	B05A (2x)
PNX5100-DDR2-DQS2_N	B05A (2x)
PNX5100-DDR2-DQS2_P	B05A (2x)
PNX5100-DDR2-DQS3_N	B05A (2x)
PNX5100-DDR2-DQS3_P	B05A (2x)
PNX5100-DDR2-ODT	B05A (3x)
PNX5100-DDR2-RAS	B05A (3x)
PNX5100-DDR2-VREF-CTRL	B05A (2x)
PNX5100-DDR2-VREF-DDR	B05A (3x)
PNX5100-DDR2-WE	B05A (3x)
PNX5100-RST-OUT	B05F (1x)
PNX5100-RST-OUT	B05I (1x)
PROG-B	B06A (2x)
PROT-DC	B01A (1x)
PROT-DC	B01C (1x)
PSEN	B04A (2x)
PSEN	B04B (1x)
RC	B04A (2x)
RC	B06B (1x)
RC	B08D (1x)
REGIMBEAU_CVBS-SWITCH	B04A (2x)
REGIMBEAU_CVBS-SWITCH	B08A (1x)
RESET-AUDIO	B04A (1x)
RESET-AUDIO	B04B (1x)
RESET-AUDIO	B04M (2x)
RESET-ETHERNET	B04B (1x)
RESET-ETHERNET	B09A (1x)
RESET-ETHERNET	B09B (2x)
RESET-FLASH-STn	B03B (3x)
RESET-NVM	B04B (1x)
RESET-NVM	B04C (1x)
RESET-PNX5100	B04B (1x)
RESET-PNX5100	B05F (1x)
RESET-ST7100	B03A (1x)
RESET-ST7100	B03B (1x)
RESET-ST7100	B04A (1x)
RESET-STBY	B04B (1x)
RESET-STBY	B04D (1x)
RESET-STBY-J	B04A (1x)
RESET-STBY-J	B04B (1x)
RESET-SYSTEM	B02A (1x)
RESET-SYSTEM	B02C (1x)
RESET-SYSTEM	B04A (2x)
RESET-SYSTEM	B04E (2x)
RESET-SYSTEM	B07E (1x)
RESET-USB20	B09A (2x)
Right-Speaker	B10A (3x)
RREF-PNX8541	B04H (1x)
RREF-PNX8541	B04P (1x)
RSETIN-ST7100	B03A (2x)
RST-TARGETn	B03F (2x)
R-VGA	B04K (1x)
R-VGA	B08B (2x)
RX0-	B04H (1x)
RX0-	B07E (2x)
RX0+	B04H (1x)
RX0+	B07E (2x)
RX1-	B04H (1x)
RX1-	B07E (2x)
RX1+	B04H (1x)
RX1+	B07E (2x)
RX2-	B04H (1x)
RX2-	B07E (2x)
RX2+	B04H (1x)
RX2+	B07E (2x)
RXC-	B04H (1x)
RXC-	B07E (2x)
RXC+	B04H (1x)
RXC+	B07E (2x)
RXD-ASC2	B03A (1x)
RXD-ASC2	B03F (1x)
RXD-MIPS	B04E (1x)
RXD-MIPS	B08D (1x)
RXD-UP	B04A (2x)
RXD-UP	B08D (3x)
SCL1	B04E (2x)
SCL2	B04E (2x)
SCL3	B04E (2x)
SCL-AMBI-3V3	B06A (3x)
SCL-DISP	B05E (2x)
SCL-DISP	B05F (1x)
SCL-DISP	B06A (4x)
SCL-SSB	B02A (1x)
SCL-SSB	B02B (2x)
SCL-SSB	B02C (1x)
SCL-SSB	B03A (1x)
SCL-SSB	B04E (2x)
SCL-SSB	B05F (2x)
SCL-SSB	B06A (2x)
SCL-SSB	B07E (1x)
SCL-SSB	B08D (2x)
SCL-TUNER	B02A (1x)
SCL-TUNER	B02B (2x)
SCL-TUNER	B02C (1x)
SCL-UP-MIPS	B04A (2x)
SCL-UP-MIPS	B04C (1x)
SCL-UP-MIPS	B04E (2x)
SDA1	B04E (2x)
SDA2	B04E (2x)
SDA3	B04E (2x)
SDA-AMBI-3V3	B06A (3x)
SDA-DISP	B05E (2x)
SDA-DISP	B05F (1x)
SDA-DISP	B06A (4x)
SDA-SSB	B02A (1x)
SDA-SSB	B02B (2x)
SDA-SSB	B02C (1x)
SDA-SSB	B03A (1x)
SDA-SSB	B04E (2x)
SDA-SSB	B05F (2x)
SDA-SSB	B06A (2x)
SDA-SSB	B07E (1x)
SDA-SSB	B08D (2x)
SDA-TUNER	B02A (1x)
SDA-TUNER	B02B (2x)
SDA-TUNER	B02C (1x)
SDA-UP-MIPS	B04A (2x)
SDA-UP-MIPS	B04C (1x)
SDA-UP-MIPS	B04E (2x)
SDM	B04A (3x)
SENSE+1V	B03E (1x)
SENSE+1V2-PNX5100	B05C (1x)
SENSE+1V2-PNX8541	B04P (1x)
SPDIF-IN1	B03D (1x)
SPDIF-IN1	B04L (1x)
SPDIF-IN1	B08D (1x)
SPDIF-OUT	B04L (1x)
SPDIF-OUT	B08B (1x)
-SPEAKER-POWER	B10A (6x)
SPI-CLK	B04A (2x)
SPI-CSB	B04A (2x)
SPI-PROG	B04A (3x)
SPI-SDI	B04A (3x)
SPI-SDO	B04A (2x)
SPI-WP	B04A (3x)
STANDBY	B01B (1x)
STANDBY	B04B (1x)
STANDBY	B08D (1x)
STANDBY	B10A (1x)
ST-DL-APP	B03A (1x)
ST-DL-APP	B04B (1x)
SUPPLY-FAULT	B01A (1x)
SUPPLY-FAULT	B04A (2x)
TDA-IF-AGC	B02A (1x)
TDA-IF-AGC	B02B (1x)
TDA-IF-AGC	B02C (1x)
TMUCLK	B03A (2x)
TRIG-IN	B03A (2x)
TRIG-IN	B03F (1x)
TRIG-OUT	B03A (1x)
TRIG-OUT	B03F (1x)
TSI0-ST-CLK	B03A (2x)
TSI0-ST-D0	B03A (2x)
TSI0-ST-D1	B03A (2x)
TSI0-ST-D2	B03A (2x)
TSI0-ST-D3	B03A (2x)
TSI0-ST-D4	B03A (2x)
TSI0-ST-D5	B03A (2x)
TSI0-ST-D6	B03A (2x)
TSI0-ST-D7	B03A (2x)
TSI0-ST-STRT	B03A (1x)
TSI0-ST-VAL	B03A (2x)
TSI1-ST-CLK	B03A (2x)
TSI1-ST-D0	B03A (2x)
TSI1-ST-D1	B03A (2x)
TSI1-ST-D2	B03A (2x)
TSI1-ST-D3	B03A (2x)
TSI1-ST-D4	B03A (2x)
TSI1-ST-D5	B03A (2x)
TSI1-ST-D6	B03A (2x)
TSI1-ST-D7	B03A (2x)
TSI1-ST-VAL	B03A (2x)
TUN-AGC	B02A (1x)
TUN-AGC	B02B (3x)
TUN-AGC-MON	B02A (1x)
TUN-AGC-MON	B02B (1x)
TX1A-	B05E (3x)
TX1A+	B05E (3x)
TX1B-	B05E (3x)
TX1B+	B05E (3x)
TX1C-	B05E (3x)
TX1C+	B05E (3x)
TX1CLK-	B05E (3x)
TX1CLK+	B05E (3x)
TX1D-	B05E (3x)
TX1D+	B05E (3x)
TX1E-	B05E (3x)
TX1E+	B05E (3x)
TX2A-	B05E (3x)
TX2A+	B05E (3x)
TX2B-	B05E (3x)
TX2B+	B05E (3x)
TX2C-	B05E (3x)
TX2C+	B05E (3x)
TX2CLK-	B05E (3x)
TX2CLK+	B05E (3x)
TX2D-	B05E (3x)
TX2D+	B05E (3x)
TX2E-	B05E (3x)
TX2E+	B05E (3x)
TX3A-	B05E (3x)
TX3A+	B05E (3x)
TX3B-	B05E (3x)
TX3B+	B05E (3x)
TX3C-	B05E (3x)
TX3C+	B05E (3x)
TX3CLK-	B05E (3x)
TX3CLK+	B05E (3x)
TX3D-	B05E (3x)
TX3D+	B05E (3x)
TX3E-	B05E (3x)
TX3E+	B05E (3x)
TX4A-	B05E (3x)
TX4A+	B05E (3x)
TX4B-	B05E (3x)
TX4B+	B05E (3x)
TX4C-	B05E (3x)
TX4C+	B05E (3x)
TX4CLK-	B05E (3x)
TX4CLK+	B05E (3x)
TX4D-	B05E (3x)
TX4D+	B05E (3x)
TX4E-	B05E (3x)
TX4E+	B05E (3x)
TXD-ASC2	B03A (1x)
TXD-ASC2	B03F (1x)
TXD-MIPS	B04E (1x)
TXD-MIPS	B08D (1x)
TXD-UP	B04A (2x)
TXD-UP	B08D (3x)
USB20-1-DM	B01B (1x)
USB20-1-DM	B09A (2x)
USB20-1-DP	B01B (1x)
USB20-1-DP	B09A (2x)
USB20-2-DM	B07C (1x)
USB20-2-DM	B09A (2x)
USB20-2-DP	B07C (1x)
USB20-2-DP	B09A (2x)
USB20-OC1	B09A (3x)
USB20-OC2	B09A (3x)
USB-OC	B07C (1x)
USB-OC	B09A (1x)
V_LVC04	B03A (5x)
V1	B02B (3x)
VDDA-ADC	B04P (2x)
VDDA-AUDIO	B04L (2x)
VDDA-AUDIO	B04P (2x)
VDDA-DAC	B04P (2x)
VDDA-LVDS	B04O (1x)
VDDA-LVDS	B04P (2x)
VDDE-2V5	B03E (7x)
VDDE-3V3	B03E (3x)
VSW	B01A (1x)
VSW	B01B (1x)
V-SYNC-VGA	B04K (1x)
V-SYNC-VGA	B08B (1x)
VTT-TERM-DDR	B04G (2x)
WC-EEPROM-PNX5100	B04E (1x)
WC-EEPROM-PNX5100	B05F (2x)
WC-EEPROM-PNX5100	B07D (1x)
WP-FLASH-ST	B03A (1x)
WP-FLASH-ST	B03B (1x)
WP-NANDFLASH	B04B (1x)
WP-NANDFLASH	B04Q (2x)
WRITE-PROT	B07D (5x)
XIO-ACK	B04F (1x)
XIO-ACK	B04Q (2x)
XIO-SEL-NAND	B04F (1x)
XIO-SEL-NAND	B04Q (2x)
Y_CVBS-MON-OUT	B04K (1x)
Y_CVBS-MON-OUT	B08B (1x)
Y_CVBS-MON-OUT-SC	B08A (1x)
Y_CVBS-MON-OUT-SC	B08B (1x)

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Layout Small Signal Board (Overview Top Side)

Ref	Loc
1735	D1
1AC1	G4
1AM0	G5
1AM2	F5
1C00	C1
1CJ0	A1
1E01	A8
1E02	A7
1E03	A6
1E04	A5
1E05	A6
1E06	A5
1E07	A5
1E10	C6
1E11	C8
1E14	D8
1E15	B8
1E50	A5
1E51	A5
1F02	A3
1F03	A4
1F29	A3
1G50	A1
1G51	B1
1H01	E1
1H10	B4
1H11	D6
1HE0	B5
1HP0	A8
1M01	A4
1M20	A4
1M36	B8
1M59	A3
1M71	A3
1M95	F1
1M99	G1
1N00	E4
1N01	D3
1P00	F7
1P02	F6
1P03	F6
1P04	F5
1P05	E8
1P07	D8
1P0A	E7
1P0B	E7
1R07	B8
1R08	A8
1R12	A8
1T04	C7
1T06	D7
1T08	C7
1T55	D8
1T60	C8
1T65	C8
1T70	D8
1T71	C8
1T75	D8
1U01	F1
2AEA	G4
2AEM	G4
2AEU	G4
2CBK	C1
2CBL	C1
2CBM	C1
2CBN	C1
2CBP	C1
2CBR	C1
2CBS	C1
2CBW	B1
2CBY	A1
2CG2	C1
2CH0	C1
2CH1	C1
2D02	D1
2D03	D1
2D04	D2
2D05	D2
2D06	D1
2D07	D2
2D08	D2
2D09	D1
2D10	D1
2D11	D1
2D12	D1
2D13	D1
2D14	D1
2D15	D1
2D16	D2
2D17	D2
2D19	D1
2D20	D2
2D21	D1
2D22	C1
2D23	D1
2D24	E1
2D25	D1
2D26	D1
2D27	D1
2D28	D1
2D29	E1
2D30	E1
2D31	E1
2D32	D1
2D33	D1
2D34	D1
2D35	C1
2D36	C1
2E01	B7
2E02	A8
2E03	A8
2E04	B8
2E05	A5
2E06	B8
2E07	A5
2E08	A5
2E09	A8
2E10	B7
2E11	A6
2E12	A7
2E13	A7
2E14	B7
2E15	B7
2E16	B6
2E17	B6
2E18	B8
2E19	A6
2E20	A8
2E21	B5
2E22	A5
2E23	A5
2E24	B8
2E25	B8
2E26	A5
2E27	A5
2E28	B5
2E29	B6
2E30	B7
2E31	B7
2E32	B6
2E33	B7
2E34	B5
2E35	D8
2E36	D8
2E37	C8
2E38	B8
2E39	B8
2E40	B8
2E41	A7
2E42	C8
2E43	D8
2E44	A8
2E45	C8
2E46	A6
2E47	A5
2E48	B6
2E49	B5
2E50	B6
2E51	B7
2E52	A5
2E53	B8
2E54	B8
2E55	A8
2E56	A8
2E57	A8
2E58	A8
2E59	B6
2E64	A6
2E65	A6
2E66	A6
2E67	A6
2E68	B6
2E69	B6
2E70	B6
2E71	B6
2E72	B6
2E73	A6
2E74	A7
2E80	B8
2E82	B7
2E83	B6
2E84	A6
2E85	A6
2E86	B7
2E87	B7
2E88	B8
2E89	B7
2E90	B7
2E91	B8
2E92	B6
2E93	B6
2E94	B6
2E95	B5
2E96	B5
2E97	B8
2E98	A8
2E99	A5
2EA1	A8
2EA2	A8
2EA3	A8
2EA4	B7
2EA5	B7
2EA9	A8
2EAA	A8
2EAB	B8
2EAE	B8
2EAF	B8
2EAK	A8
2EAL	A8
2EAM	A8
2EAN	A8
2EAP	A8
2EB4	A6
2EB6	A8
2ECB	A8
2ECC	A8
2ECD	A8
2ECE	A8
2F00	A3
2F01	A3
2F02	A3
2F05	A4
2F06	B4
2F07	A4
2F08	A4
2F10	B3
2F12	A3
2F13	A3
2F14	A3
2F15	B3
2F20	A3
2F21	A3
2F22	A3
2F23	A3
2F24	B3
2F25	B3
2F30	A3
2F31	A3
2F32	A3
2F33	A3
2F34	A3
2F35	A3
2F36	A3
2F37	A3
2F38	B3
2F39	B3
2F43	A4
2F44	A4
2F45	A4
2F46	A3
2F47	A3
2F48	A3
2F49	A3
2FA0	A4
2FA1	A4
2FA2	A4
2FA3	A4
2FA4	A4
2FA5	A4
2FA6	A3
2FA7	A3
2FA8	A3
2FA9	A3
2FB2	A4
2FB3	B4
2H02	B4
2H10	C4
2H11	B5
2H12	B5
2HA0	D4
2HA1	D3
2HHB	D2
2HKA	D3
2HKC	D3
2HM1	B3
2HM2	B3
2HM3	B3
2HM4	B3
2HM5	B3
2HM8	B3
2HMG	C3
2HMH	C4
2HR0	C5
2HR1	C5
2HR2	C5
2HR3	C5
2HR4	C5
2HR5	C5
2HR6	C5
2HR7	C5
2HR8	C5
2HR9	C5
2HRA	C5
2HRB	C5
2HRC	C5
2HRD	C5
2HRE	C5
2HRF	C5
2HRG	C5
2HRH	C5
2HRJ	C5
2HRK	C5
2HRZ	C5
2HS0	C5
2HS1	C5
2HS2	C5
2HS3	C5
2HS4	D5
2HS7	D5
2HS8	D5
2HS9	D5
2HSA	D5
2HSB	C5
2HSC	C5
2HSD	C5
2HSE	C5
2HSF	D5
2HSJ	D5
2HSK	D5
2HSM	D5
2HSP	C5
2HT8	D5
2HTL	D5
2HTP	D5
2HTR	D5
2HTU	D5
2HTV	D5
2HU5	D5
2HU8	D5
2HVC	B4
2N0M	E4
2N13	E4
2N1C	E4
2N20	E3
2N21	E3
2P01	F5
2P02	F5
2P03	E6
2P05	F5
2P15	G6
2P16	G6
2P24	E8
2P27	E6
2P28	E6
2P29	E6
2P30	E5
2P31	E6
2P32	E6
2P33	E5
2P34	E5
2P35	E5
2P36	E6
2P37	E6
2P38	E6
2P39	E5
2P40	E5
2P41	E6
2P55	F6
2P56	F6
2P57	F6
2P58	F6
2P5G	E8
2T48	D7
2T49	D7
2T53	D7
2T59	D7
2T61	D6
2T62	D7
2T64	C7
2T67	D6
2T68	D7
2T69	D7
2T71	D6
2T72	D6
2T91	D7
2U05	F2
2U06	F2
2U08	E1
2U09	E1
2U0F	E1
2U0J	E1
2U0K	E1
2U0R	E2
2U0W	E1
2U0Y	F1
2U0Z	F2
2U10	F1
2U11	F1
2U14	F1
2U15	G1
2U18	E1
2U19	E1
2U1A	E1
2U1B	E2
2U20	E1
2U21	G1
2U22	F1
2U23	F1
2U24	E1
2U25	E1
2U26	E1
2U30	F1
2U31	G1
2U32	F1
2U33	E1
2U34	F1
2U35	F1
2U36	F1
2U40	E1
2U50	E1
2U60	E1
2U62	E1
2U63	E1
2U64	F1
2U65	F1
2U66	E1
2U67	E1
2U68	F1
2U69	F1
2U86	G1
2U8A	G2
2U8C	G2
2U8D	G2
2U8E	G1
2U8F	E1
2U8G	G2
2U8H	F2
2U8K	F2
2U8M	F2
2U8Q	G1
2U8R	G1
2U8U	G2
2U8V	G2
3A18	G4
3A33	G4
3A34	G4
3A40	G5
3A41	G5
3A42	G5
3A53	G4
3AA1	G3
3AA2	G3
3AA3	F3
3AA4	F3
3AA5	G3
3AA6	G3
3AA7	F3
3AA8	F3
3AA9	G3
3AAB	G2
3AAC	F2
3AAK	F3
3AAL	G3
3AAM	F3
3AM7	F5
3AM8	F4
3C03	A2
3C05	A2
3C06	A2
3C07	A2
3C08	A2
3C09	A2
3C11	A2
3C12	A2
3C13	A2
3C25	A1
3C26	A2
3C27	A1
3C28	A2
3C30	A1
3C31	A1
3C32	A1
3CA2	A1
3CA3	A1
3CA8	B1
3CA9	C1
3CAA	C1
3CAB	C1
3CAC	C1
3CAD	C1
3CAE	C1
3CAF	B1
3CAG	B1
3CAH	B1
3CD0	B2
3CD1	A1
3CD2	A1
3CFK	C2
3CFL	C2
3CH8	C1
3CH9	C1
3CHA	C1
3CHB	C1
3CHC	C1
3CHD	C1
3CHE	C1
3CHF	C1
3CHG	C1
3D02	D2
3D03	D1
3D04	D1
3D05	D1
3D06	D1
3D07	D2
3D08	D1
3D09	D1
3D10	D1
3D11	D1
3D12	D1
3D13	E1
3D14	C1
3D17	D2
3D19	D1
3E00	B8
3E01	A6
3E02	B6
3E03	A6
3E04	A5
3E05	A6
3E06	B5
3E07	B8
3E08	A5
3E09	A8
3E10	A5
3E11	B7
3E12	B7
3E13	A5
3E14	B7
3E15	B7
3E16	B7
3E17	B7
3E18	B7
3E19	B8
3E20	A5
3E21	B6
3E22	B8
3E23	A8
3E24	B6
3E25	B5
3E26	B8
3E27	B8
3E28	B7
3E29	A5
3E30	B7
3E31	B8
3E32	B8
3E33	B5
3E34	B7
3E35	A6
3E36	A6
3E37	B7
3E38	B7
3E39	B5
3E40	A5
3E42	A6
3E43	A8
3E44	A8
3E45	A7
3E46	A6
3E47	A5
3E48	B5
3E49	A5
3E50	B5
3E51	B6
3E52	A6
3E53	B5
3E54	A7
3E55	A6
3E56	A5
3E57	B8
3E58	A5
3E59	A8
3E60	B5
3E61	A7
3E62	A7
3E63	B6
3E64	B6
3E65	A5
3E66	A5
3E67	B8
3E68	A8
3E69	A7
3E70	A5
3E71	A5
3E72	A5
3E73	A7
3E74	D8
3E75	D8
3E76	C8
3E77	C8
3E78	C8
3E79	B8
3E80	B8
3E81	C8
3E82	A6
3E85	A8
3E86	A7
3E87	B5
3E88	B5
3E89	A6
3E90	A6
3E92	A6
3E93	A8
3E95	B6
3E96	B6
3E97	B6
3E98	B6
3EA7	B7
3EA8	B7
3EA9	B7
3EAT	A8
3EAY	A8
3EAZ	A8
3EB0	B7
3EB3	A8
3EB6	A7
3EB7	A7
3EB8	A6
3EB9	A6
3EC0	A8
3EC1	B8
3EC2	A8
3EC3	A8
3EC4	A8
3EC5	A8
3EC9	A8
3ECE	A8
3ECF	A8
3ECG	A8
3ECH	A8
3ECS	B8
3ED1	A8
3F00	A3
3F01	A3
3F02	A3
3F03	A3
3F04	A3
3F05	A3
3F06	A3
3F07	A3
3F08	A3
3F11	B4
3F16	B3
3F24	A3
3F35	A3
3F36	A3
3F37	A3
3F38	A3
3F39	A3
3FA0	A4
3FA1	A4
3FA2	A4
3FA5	A3
3FA6	A3
3FA7	A3
3FA8	A3
3FA9	A3
3FAA	A3
3FAB	A3
3FAC	A3
3FAD	A4
3FAE	A4
3FAF	A4
3FAG	A4
3H01	B4
3H06	B4
3H07	B4
3H08	B4
3H12	D3
3H22	D3
3H25	D3
3H41	B5
3H43	B5
3H54	B4
3H56	B4
3H61	D4
3H69	B4
3H72	B5
3H73	B5
3HA0	D3
3HA3	D3
3HA4	D4
3HA8	D4
3HAC	D3
3HG0	B4
3HJ0	C3
3HKM	C3
3HMA	B3
3HMB	B3
3HMC	B3
3HMD	B3
3HML	B3
3HMU	B3
3HMV	B3
3HMW	B3
3HMY	B3
3HMZ	B3
3HP0	C4
3HP1	C4
3HP5	C4
3HR0	C5
3HR3	C5
3HR8	C5
3HRC	C5
3HRJ	C5
3HRP	C5
3HRR	C5
3HRS	D5
3HRT	D5
3HRU	D5
3HRV	D5
3HRW	C5
3HRY	C5
3HRZ	D5
3HS0	D5
3HS1	D5
3HS2	D5
3HS8	D5
3HS9	D5
3HSF	D5
3HSH	D5
3HSJ	D5
3HSM	D5
3HSN	D5
3HSP	C5
3HSQ	C5
3HST	C5
3HSV	C5
3HSW	D5
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3N02	E3
3N03	E3
3N04	E3
3N05	E3
3N07	E3
3N08	E3
3N09	E3
3N0B	E3
3N0C	E2
3N0D	E3
3N0G	E4
3N0Y	E4
3N36	E3
3P01	F5
3P02	F5
3P04	F5
3P16	F5
3P17	F5
3P18	F5
3P19	F5
3P23	F6
3P28	E5
3P34	F5
3P36	F6
3P39	E6
3P40	E5
3P42	E5
3P44	E5
3P46	E6
3P48	E6
3P49	E6
3P50	E6
3P51	E6
3P52	E6
3P53	E6
3P54	E6
3P55	E6
3P56	E6
3P58	E6
3P59	E8
3P60	E8
3P62	E8
3P63	F6
3P64	F6
3P65	F6
3P66	F6
3P67	F6
3P68	F6
3P69	F6
3P6A	F6
3P6B	F6
3P6C	F6
3P6D	F6
3P6E	F6
3P6F	F6
3P6G	F6
3P6H	F6
3P6J	F6
3P6L	F6
3P6N	F6
3P70	E8
3P72	E8
3P73	E8
3P75	E8
3P76	E6
3P77	E6
3P78	E6
3P80	G5
3P81	G5
3P82	G5
3P83	G5
3P84	G6
3P85	G6
3P86	G6
3P87	G6
3P88	G6
3T35	D7
3T36	D7
3T37	D7
3T38	D6
3T65	D7
3T66	D7
3T67	D8
3U07	E1
3U08	E1
3U09	E1
3U0K	E1
3U1J	E2
3U1W	G1
3U1Y	G2
3U2G	G2
3U2H	G1
3U33	G2
3U34	G2
3U3J	G2
3U3N	G1
3U3T	G2
3U3V	E1
3U3W	E1
3U42	G1
3U46	E1
3U4A	E1
3U50	E1
3U51	E1
3U52	E1
3U53	E1
3U54	E1
3U55	G1
3U56	F1
3U57	F1
3U58	F1
3U60	E1
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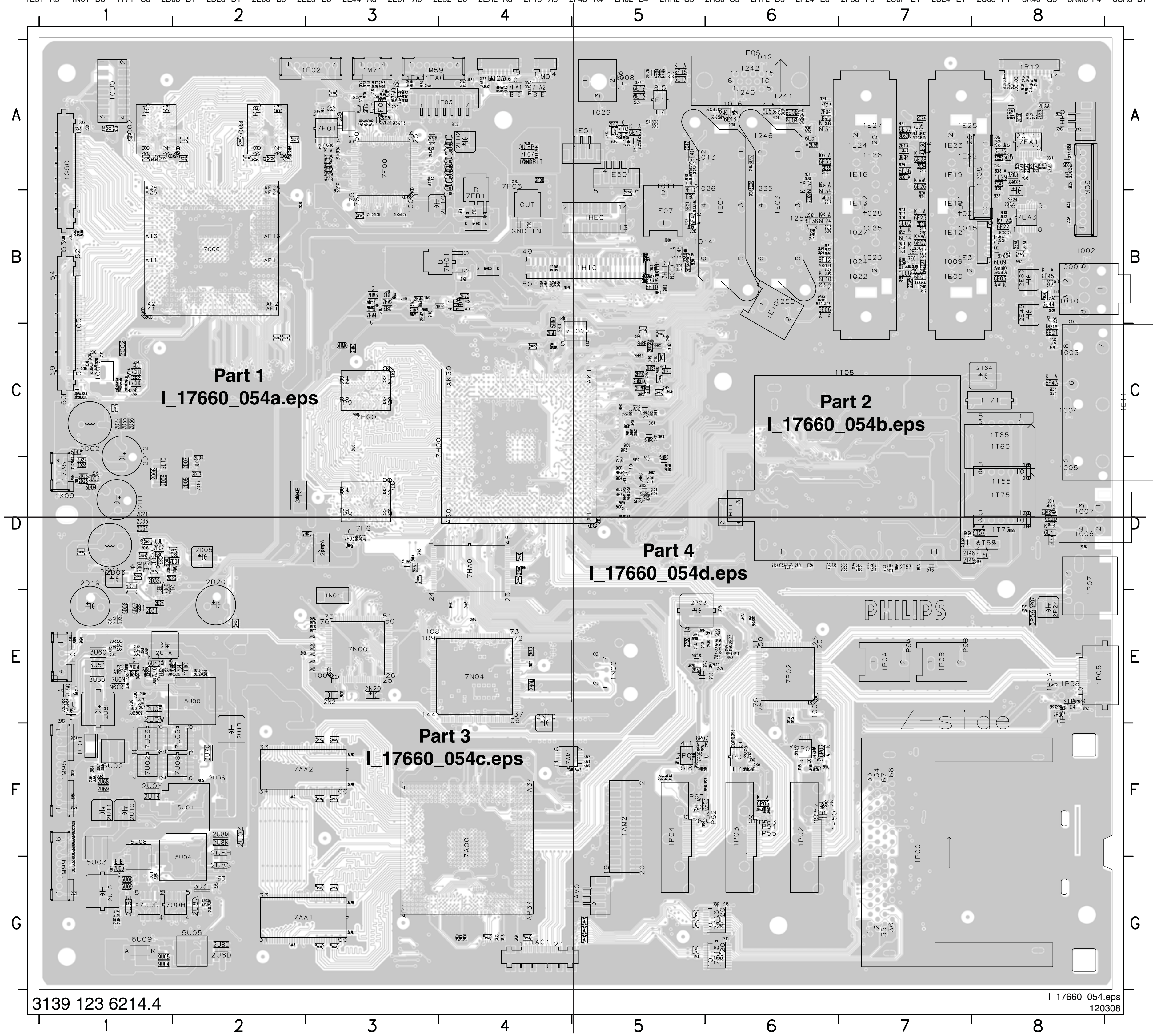
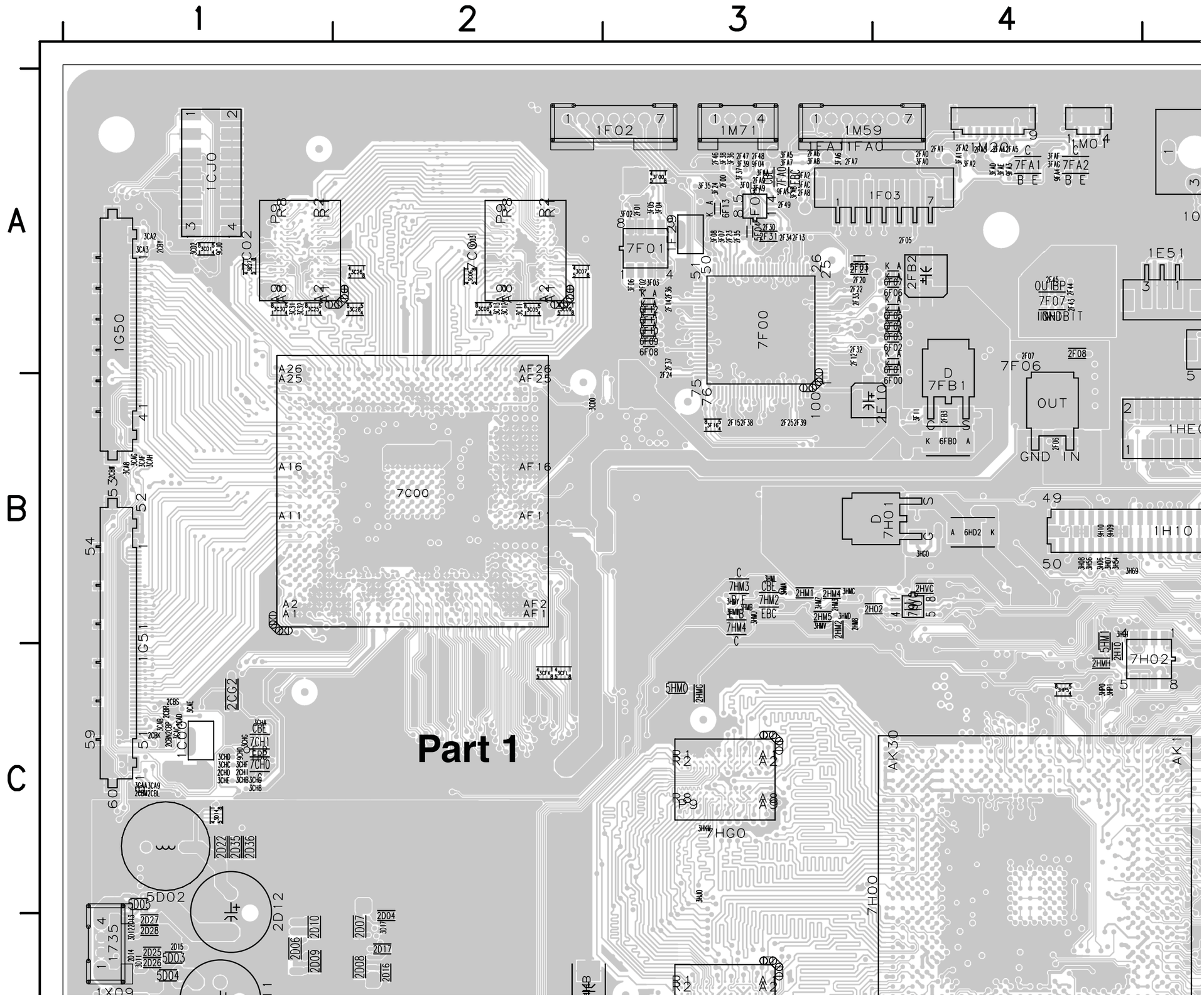
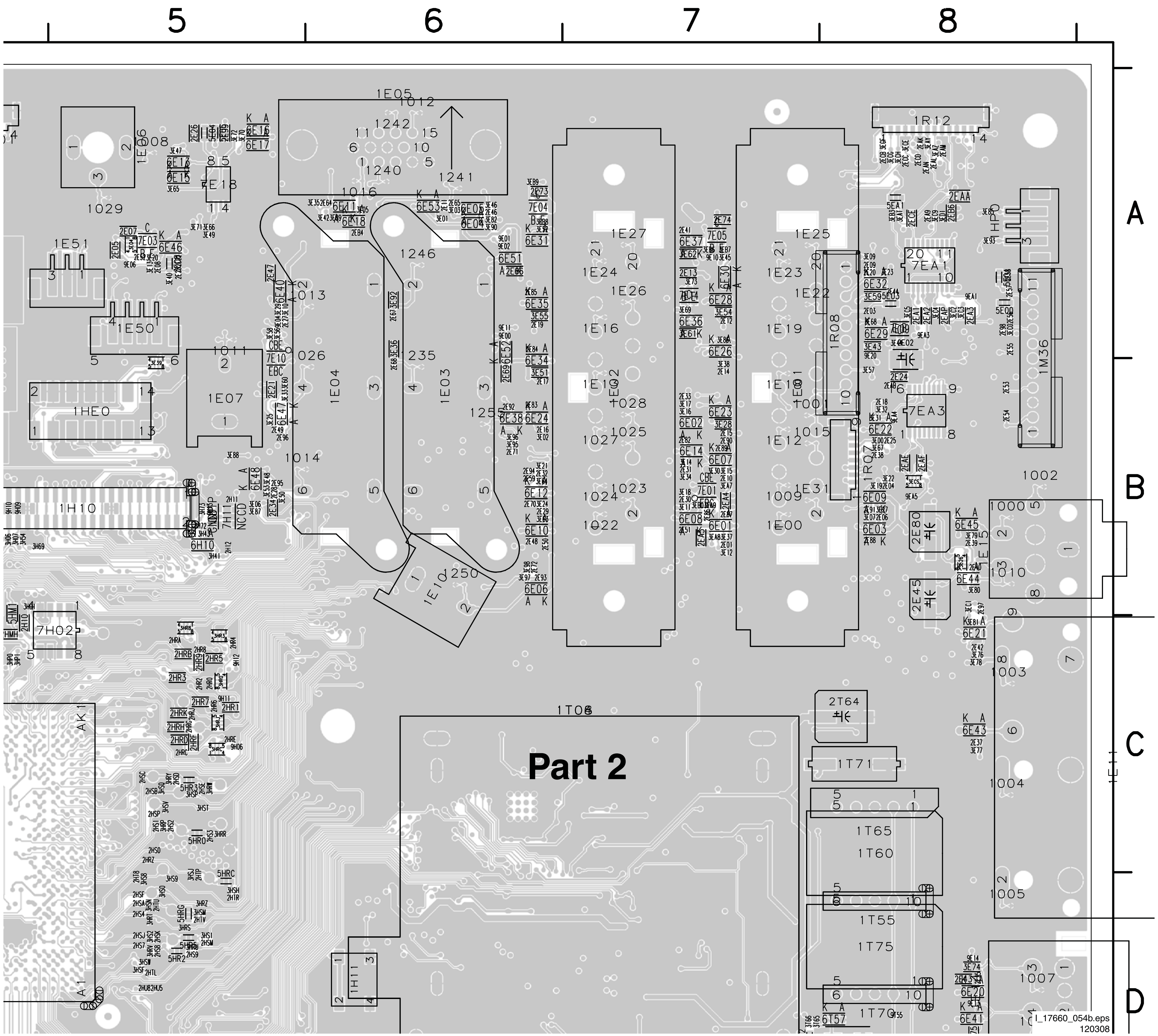
3U62	E1
3U63	E1
3U64	E1
3U65	F1
3U66	F1
3U67	F1
3U68	E1
3U69	E1
3U6A	F1
3U6B	E1
3U70	F2
3U74	E1
3U75	E2
3U76	E2
3U80	E1
3U81	E1
3U82	E1
3U84	E1
3U85	E1
3U86	E1
3U88	E1
3U89	E2
5D00	E1
5D01	D1
5D02	C1
5D03	D1
5D04	D1
5D05	C1
5D07	E1
5D08	E1
5E00	A8
5E01	A8
5E03	A8
5E04	A5
5E05	A5
5EA1	A8
5F03	A3
5F04	A3
5HA0	D3
5HM0	C3
5HM1	B4
5HR0	C5
5HR2	D5
5HR3	C5
5HR5	D5
5HRC	D5
5HRG	D5
5P01	F6
5P02	F6
5P07	E8
5P08	F5
5P09	E5
5P10	E5
5P11	E5
5T52	D7
5T61	D7
5U00	E1
5U01	F2
5U02	F1
5U03	F1
5U04	F1
5U05	G2
5U06	G1
5U08	F1
5U09	G1
6D01	E1
6E01	B7
6E02	B7
6E03	B8
6E04	A6
6E05	A6
6E06	B6
6E07	B7
6E08	B7
6E09	B8
6E10	B6
6E11	A5
6E12	B6
6E13	A5
6E14	B7
6E15	A5
6E16	A5
6E17	A5
6E18	A6
6E20	D8
6E21	C8
6E22	B8
6E23	B7
6E24	B6
6E26	B7
6E28	A7
6E29	A8
6E30	A7
6E31	A6
6E32	A8
6E34	B6
6E35	A6
6E36	A7
6E37	A7
6E38	B6
6E40	A5
6E41	D8
6E43	C8
6E44	B8
6E45	B8
6E46	A5
6E47	B5
6E48	B5
6E51	A6
6E52	A6
6E53	A6
6F00	B4
6F01	A4
6F02	A4
6F03	A4
6F04	A4
6F05	A4
6F06	A4
6F07	A4
6F08	A3
6F09	A3
6F10	A3
6F11	A3
6F12	A3
6F13	A3
6FB0	B4
6H10	B5
6HD2	B4
6P03	F6
6P04	E8
6P05	F6
6P06	F6
6P07	F5
6T55	D8
6T56	D8
6T57	D8
6U09	G1
6U40	E1
7A00	F4
7AA1	G2
7AA2	F2
7AM1	F4
7C00	A2
7C01	A2
7C02	A2
7CH0	C1
7CH1	C1
7D00	D2
7D01	D2
7D02	D1
7D03	D1
7D05	D1
7E01	B7
7E03	A5
7E04	A6
7E05	A7
7E09	A8
7E10	B5
7E14	A7
7E18	A5
7EA1	A8
7EA3	B8
7F00	A3
7F01	A3
7F06	B4
7F07	A4
7F08	A3
7FA0	A3
7FA1	A4
7FA2	A4
7FB1	A4
7H00	D3
7H01	B3
7H02	B5
7H03	D3
7H11	B5
7HA0	D3
7HG0	C3
7HG1	D3
7HM2	B3
7HM3	B3
7HM4	B3
7HV0	B4
7N00	E3
7N04	E4
7P02	E6
7P04	F6
7P05	F6
7P08	F5
7P09	F6
7P15	G6
7P16	G6
7P30	E8
7U02	F1
7U05	F2
7U06	F1
7U08	F2
7U0D	G1
7U0H	G2
7U0M	E1
7U0N	E1
7U0Q	G1
7U40	E1
7U41	E2
7U50	E1
7U51	E1
9AC3	G4
9AM0	F5
9AM1	F5
9AM2	F5
9CH0	C1
9CJ0	A1
9D02	E2
9D03	D1
9E00	A6
9E01	A6
9E02	A6
9E04	A5
9E06	A5
9E10	A7
9E11	A6
9E13	D8
9E14	D8
9E20	A8
9EA1	A8
9EA3	A8
9EA4	B8
9EA5	B8
9F04	A3
9FA1	A3
9FA2	A3
9FA3	A4
9FA4	A4
9H05	D3
9H06	C5
9H09	B4
9H10	B4
9H11	C5
9H12	C5
9H13	B5
9N05	E4
9N06	E4
9P10	E6
9P12	F6
9P14	F5
9P17	F6
9T21	D7
9T53	D6
9T54	D6
9T55	D8
9T56	D6
9T58	D7
9T61	D7
9T64	D7
9T77	D7
9U04	G1
9U05	G1



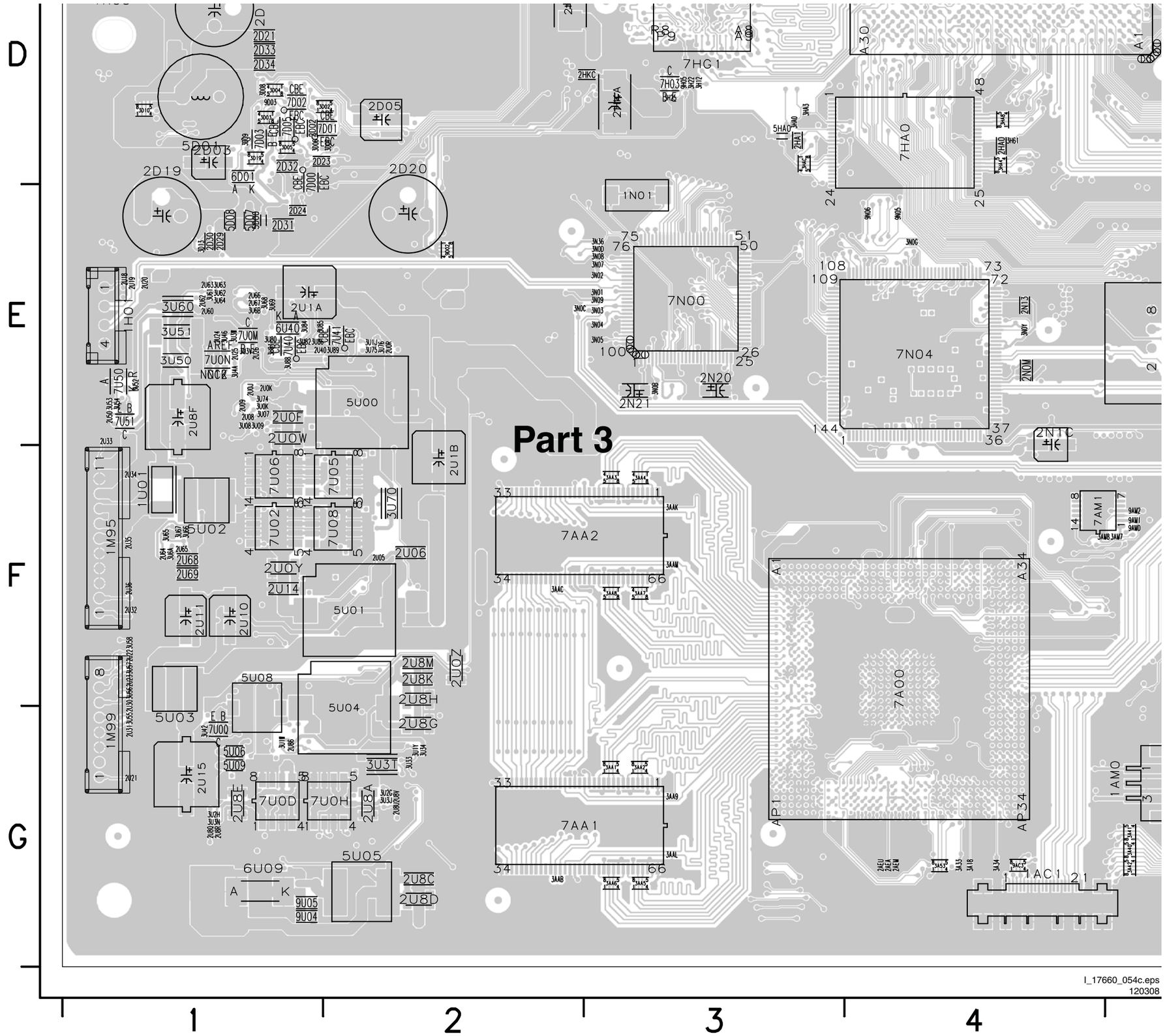
Layout Small Signal Board (Part 1 Top Side)



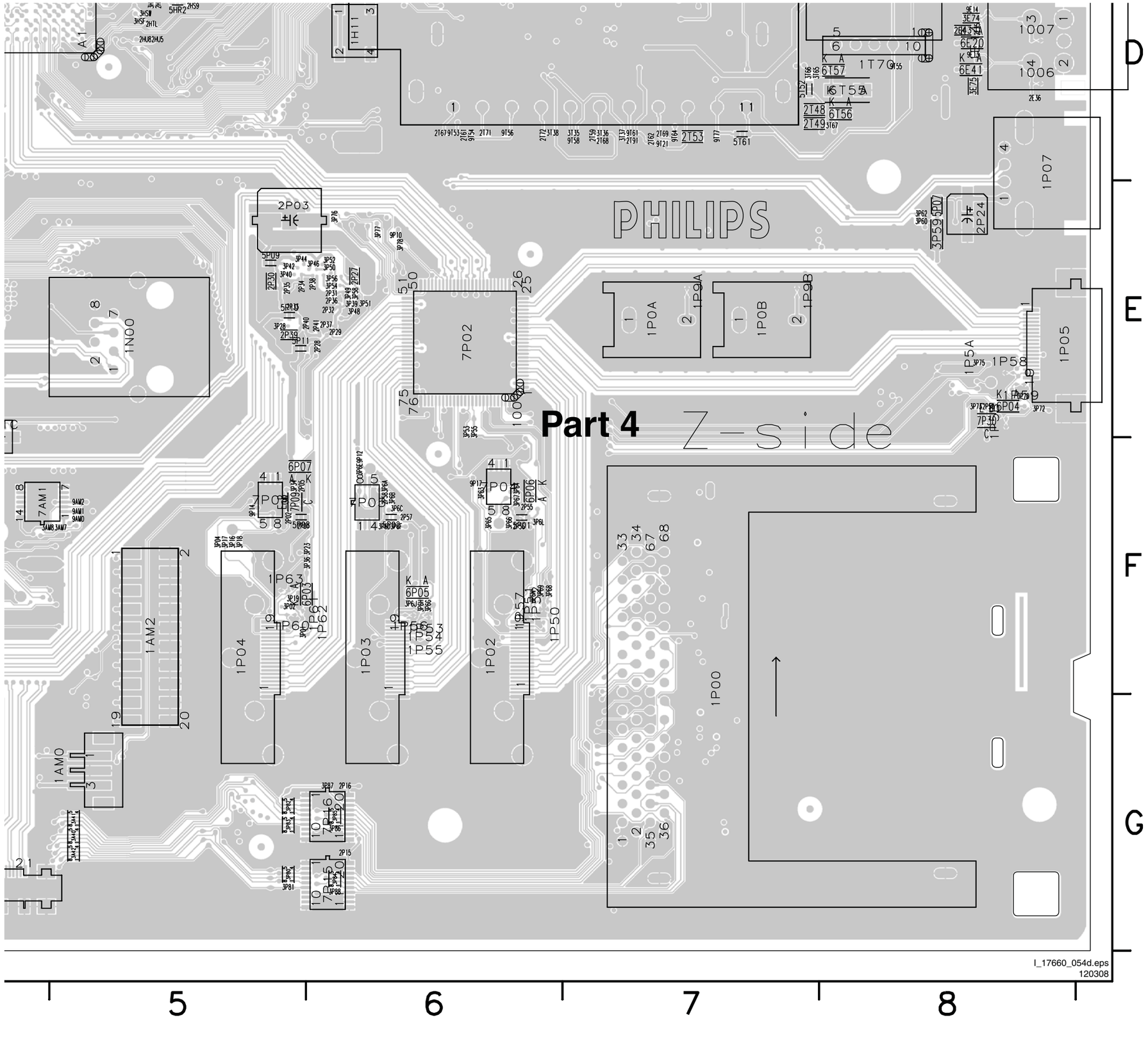
Layout Small Signal Board (Part 2 Top Side)



Layout Small Signal Board (Part 3 Top Side)



Layout Small Signal Board (Part 4 Top Side)



Layout Small Signal Board (Overview Bottom Side)

1A10 F6
1CAA B8
1CD0 B7
1F50 A6
1HF0 C5
1N02 F5
1T85 D2
1TA1 D2
1U02 G8
2A18 F6
2A19 E6
2A20 F6
2A21 F6
2A22 F6

2A23 F6
2A24 G5
2A25 G5
2A26 F5
2A50 G6
2AA0 G6
2AA1 G6
2AA2 F6
2AA3 F7
2AA6 G7
2AA7 G6
2AA8 G7
2AA9 F6
2AAA F7

2AAB F7
2AAE F7
2AAF F6
2AAG F6
2AAH F6
2AAJ F6
2AAK F6
2AAL G7
2AAM G7
2AAN G7
2AAP G6
2AAR G6
2AAS G6
2AAT G6

2AAU G6
2AAZ F5
2AB0 F5
2AB1 F6
2AB2 F6
2AB3 F6
2AB4 F6
2AB5 G6
2AB6 G6
2AB8 F6
2AB9 F6
2ABA F6
2ABB F5
2AC0 F5

2AE2 G5
2AE5 G5
2AE7 G5
2AE8 G5
2AEB G5
2AEC G6
2AED F5
2AEE F5
2AEH F6
2AEJ F5
2AEN F5
2AER G5
2AET F5
2AEZ F5

2AF0 G5
2AF4 F5
2AF5 F5
2AF8 G5
2AFB G6
2AFC G6
2AFD G6
2AFE F5
2AFF G5
2AFG F5
2AFH F5
2AFJ G5
2AFK G5
2AFL G5

2AFN F5
2AFR F5
2AFS F6
2AFT F6
2AG4 F5
2AG5 F5
2AG6 F5
2AG7 F5
2AG8 F5
2AG9 G5
2AGA G6
2AGB G6
2AGC F6
2AGD F6

2AGG F5
2AGH F5
2AGN G6
2AGP G5
2AGT F6
2AM0 G5
2AM1 G4
2AM2 G4
2AM3 G5
2AM4 G4
2C00 B7
2C01 A7
2C02 A8
2C13 A7

2C14 A7
2C15 A7
2C16 A7
2C17 A7
2C18 A7
2C19 A7
2C29 A7
2C30 A7
2C32 A7
2C33 A8
2C34 A8
2C35 A8
2C36 A8
2C38 A8

2C39 A7
2C40 A7
2C41 A7
2C42 A7
2C43 A8
2C44 A8
2C55 B7
2C56 A7
2C57 B7
2C58 A7
2C59 B7
2C60 B7
2C61 B7
2C62 B7

2C63 B7
2C64 B7
2C65 B7
2C66 B7
2C67 B7
2C68 B7
2C69 B7
2C70 B8
2C71 B7
2C72 B7
2C73 B7
2C74 B7
2C75 B8
2C76 B7

2C77 B7
2C78 B7
2C79 B7
2C80 B7
2C81 B7
2C82 B7
2C83 B8
2C84 B7
2C85 B7
2C86 B7
2C87 B7
2C88 B7
2C89 B7
2C90 A7

2C91 B8
2C92 B8
2C93 B7
2C94 B7
2C95 B7
2C96 B7
2C97 B7
2CA0 B8
2CA1 B8
2CA2 B8
2CA3 B8
2CA4 B8
2CA5 A8
2CA6 A8

2CA7 A8
2CA8 A8
2CA9 A8
2CAA A8
2CAB A8
2CAC A8
2CAD A8
2CAE A8
2CAF A8
2CAG A8
2CAH A8
2CAJ A8
2CAK A8
2CAM A8

2CAN A8
2CAP A8
2CAR A8
2CAS C8
2CAT C8
2CAV C8
2CAW C8
2CAY C8
2CAZ C8
2CB0 C8
2CB1 C8
2CB2 C8
2CB3 C8
2CB4 C8

2CB5 B8
2CB6 B8
2CB7 B8
2CB8 B8
2CB9 B8
2CBA B8
2CBB B8
2CBC B8
2CBD B8
2CBE B8
2CBF B8
2CBG B8
2CBH B8
2CBJ C8

2CBT B8
2CBU B8
2CBV B8
2CBZ A8
2CD0 B7
2CD1 B7
2CG0 C8
2CG1 C8
2CG3 B8
2CG4 B8
2CG5 B8
2CG6 B8
2CG7 B8
2CG8 B8

2CGB A8
2CGC A8
2CGD A8
2E60 A4
2E61 A4
2E62 A4
2E63 A4
2E75 A1
2E76 A1
2E77 A1
2E78 A1
2E79 A1
2E81 A1
2EA6 A1

2EAC B1
2EAD B1
2EAQ A1
2F03 A6
2F04 A6
2F09 B6
2F11 B6
2FB0 B5
2FB1 A5
2FB4 B5
2FB5 B5
2FB6 B5
2FB7 B5
2H00 C4

2H01 C4
2H03 B4
2H04 D4
2H05 D4
2H06 C4
2H07 C4
2H09 D3
2HA2 D4
2HA3 D4
2HA4 D4
2HA5 C4
2HC0 C6
2HD0 B5
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2HF1 C4
2HF2 C5
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2HGG C6
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2HHJ C7
2HHK C6

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2HMY C5
2HMZ B5
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2HRW C5
2HRY C5
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2HSV C4
2HSW C5
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2HSZ D4
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3P27 G2
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5N07 E5
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5TA2 D3
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7E06 A1
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7U0L G8
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7U0R G8
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9E09 A4
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9EA7 A1
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9F03 A6
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9HG2 D5
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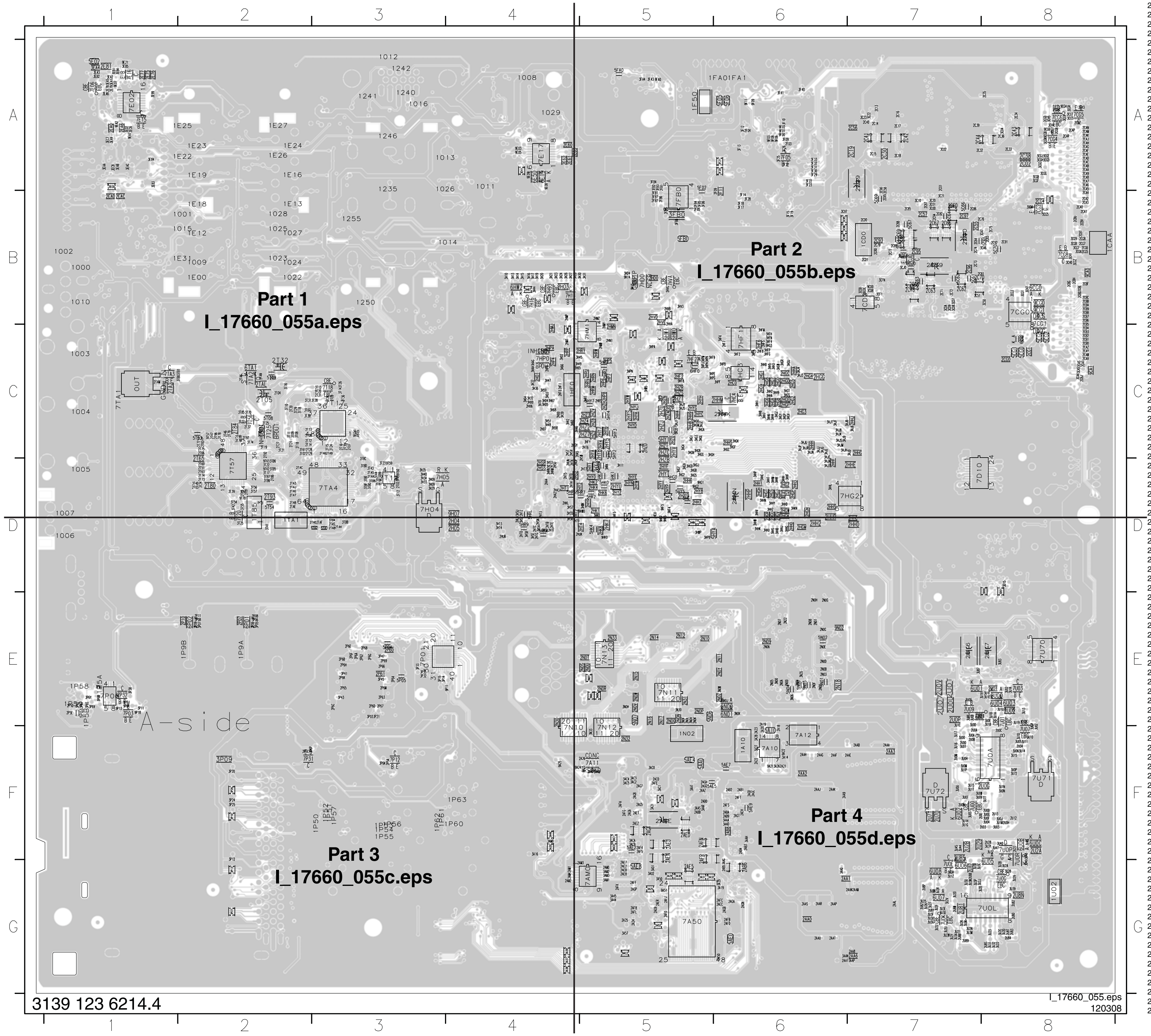
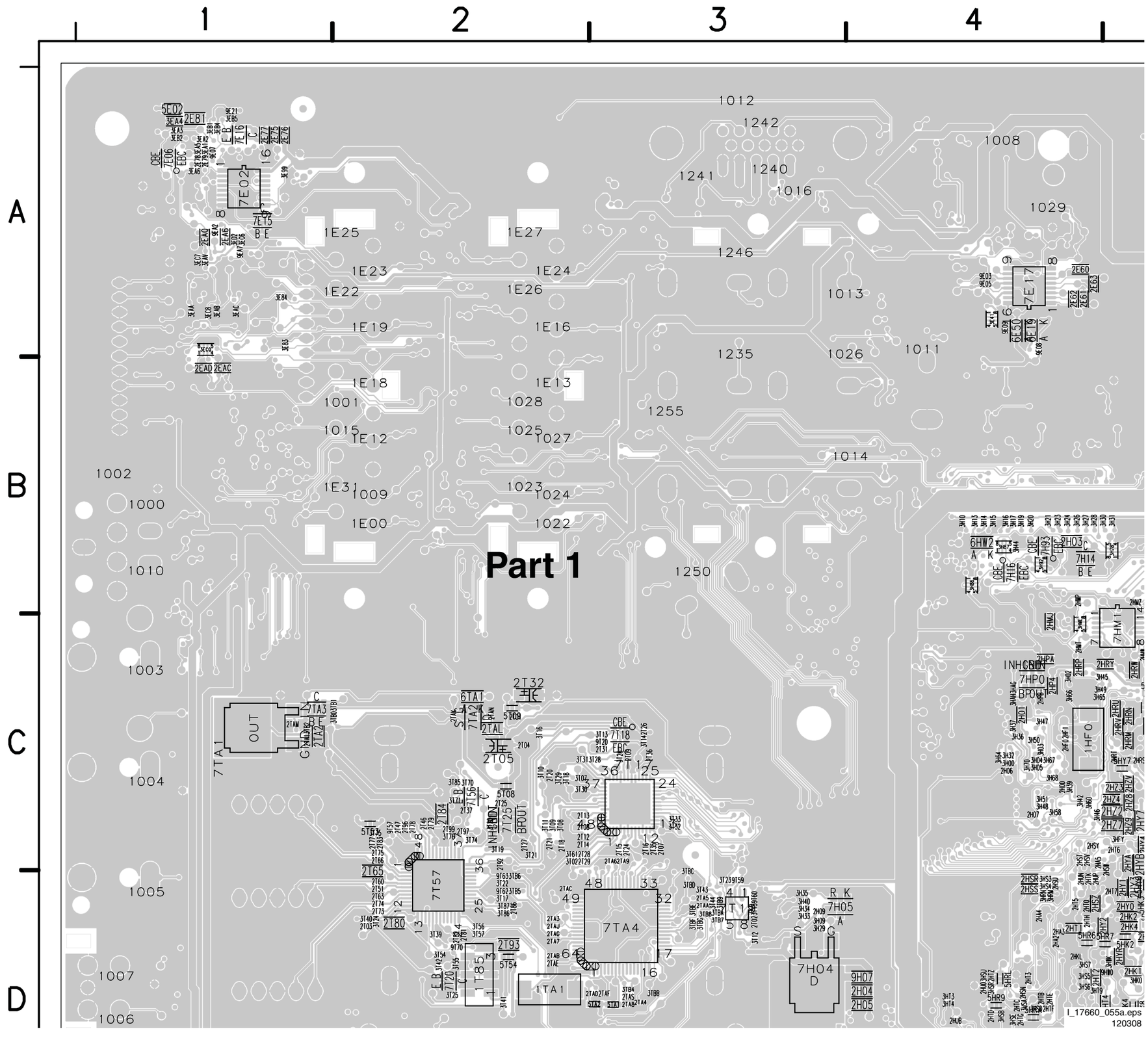
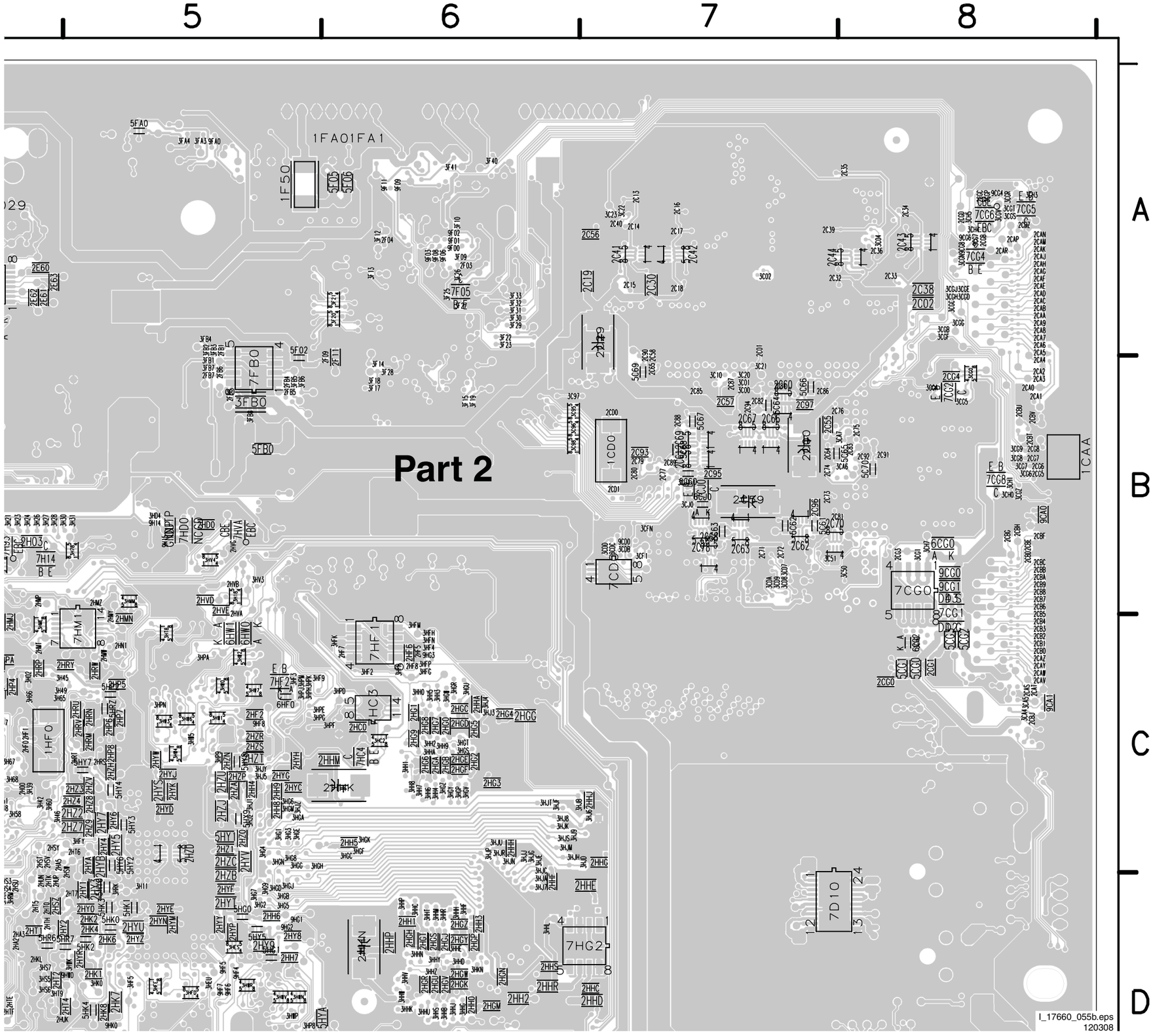


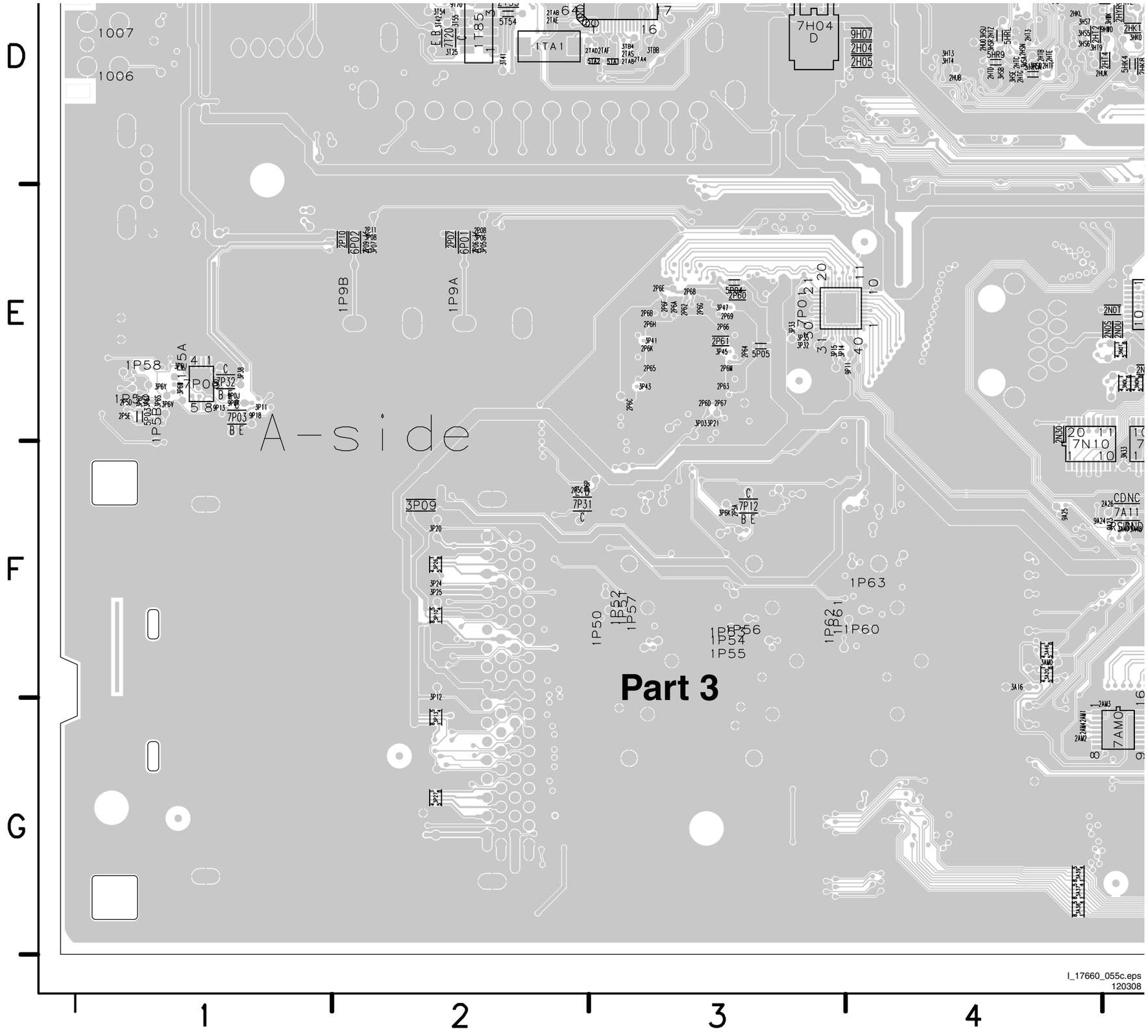
Layout Small Signal Board (Part 1 Bottom Side)



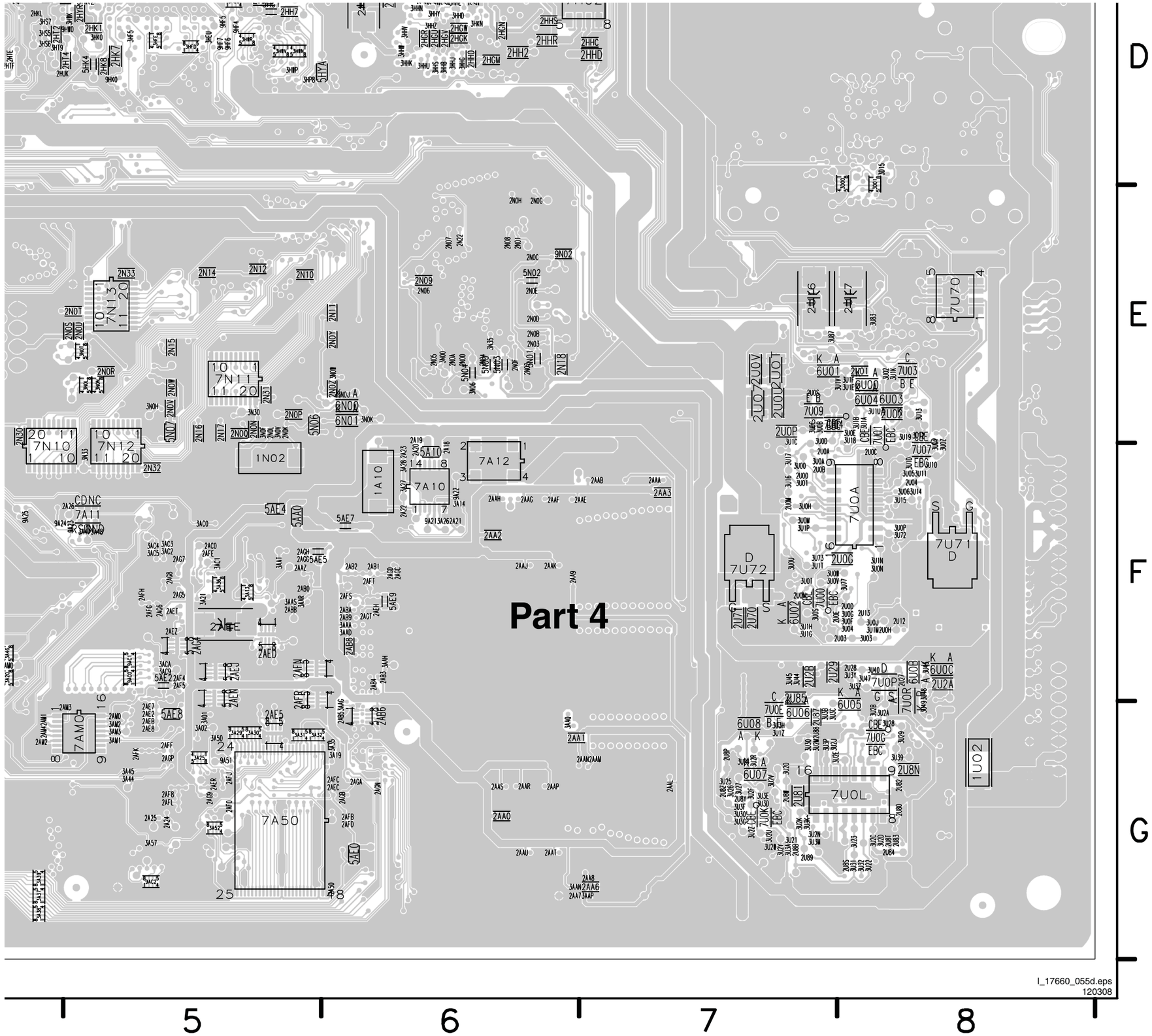
Layout Small Signal Board (Part 2 Bottom Side)



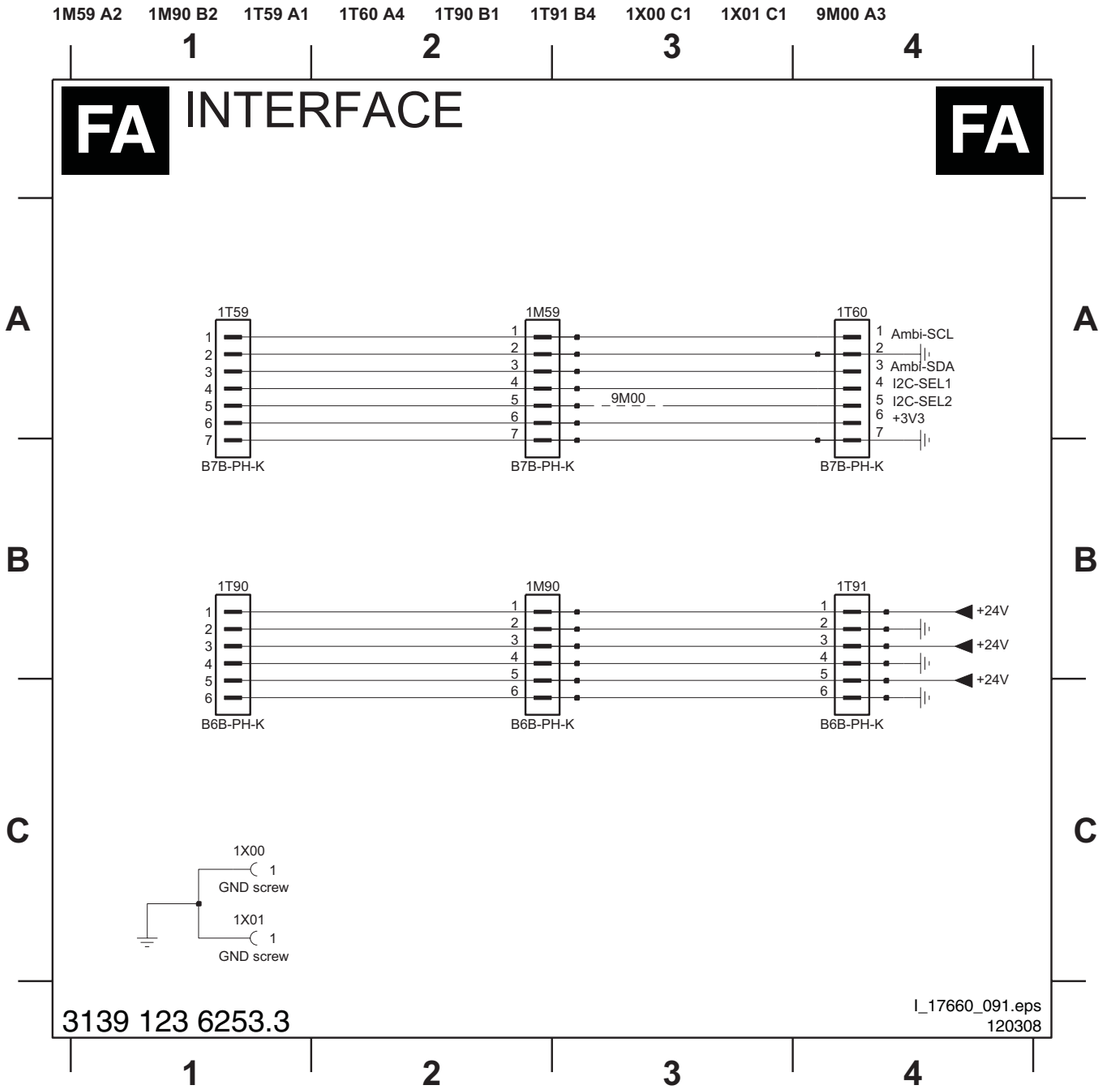
Layout Small Signal Board (Part 3 Bottom Side)



Layout Small Signal Board (Part 4 Bottom Side)



AmbiLight Interface Panel



Layout AmbiLight Interface Panel (Top Side)

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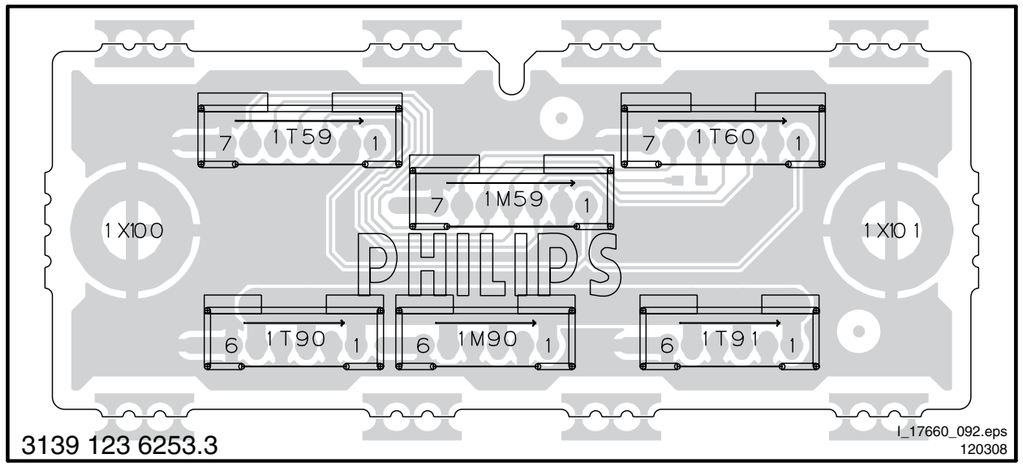
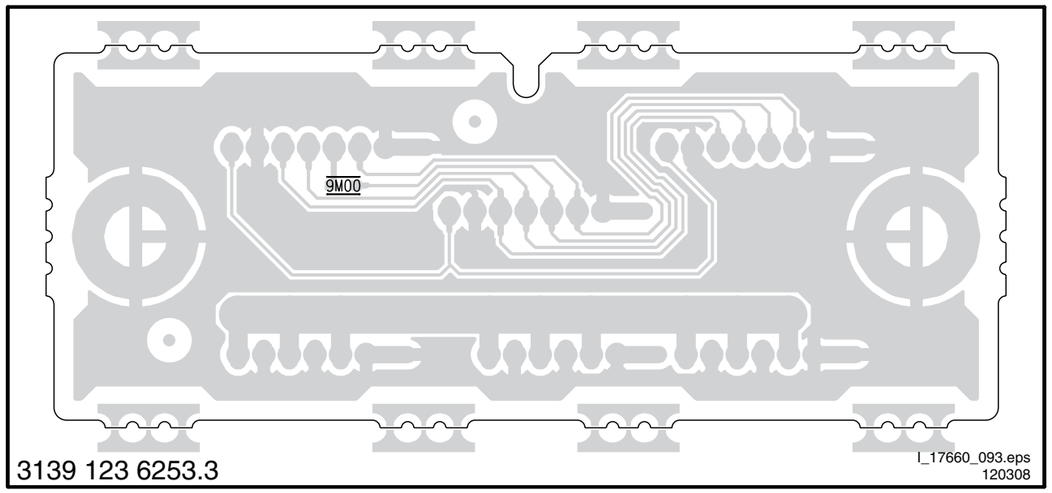
1M90 --	1T60 --	1T91 --	1X01 --

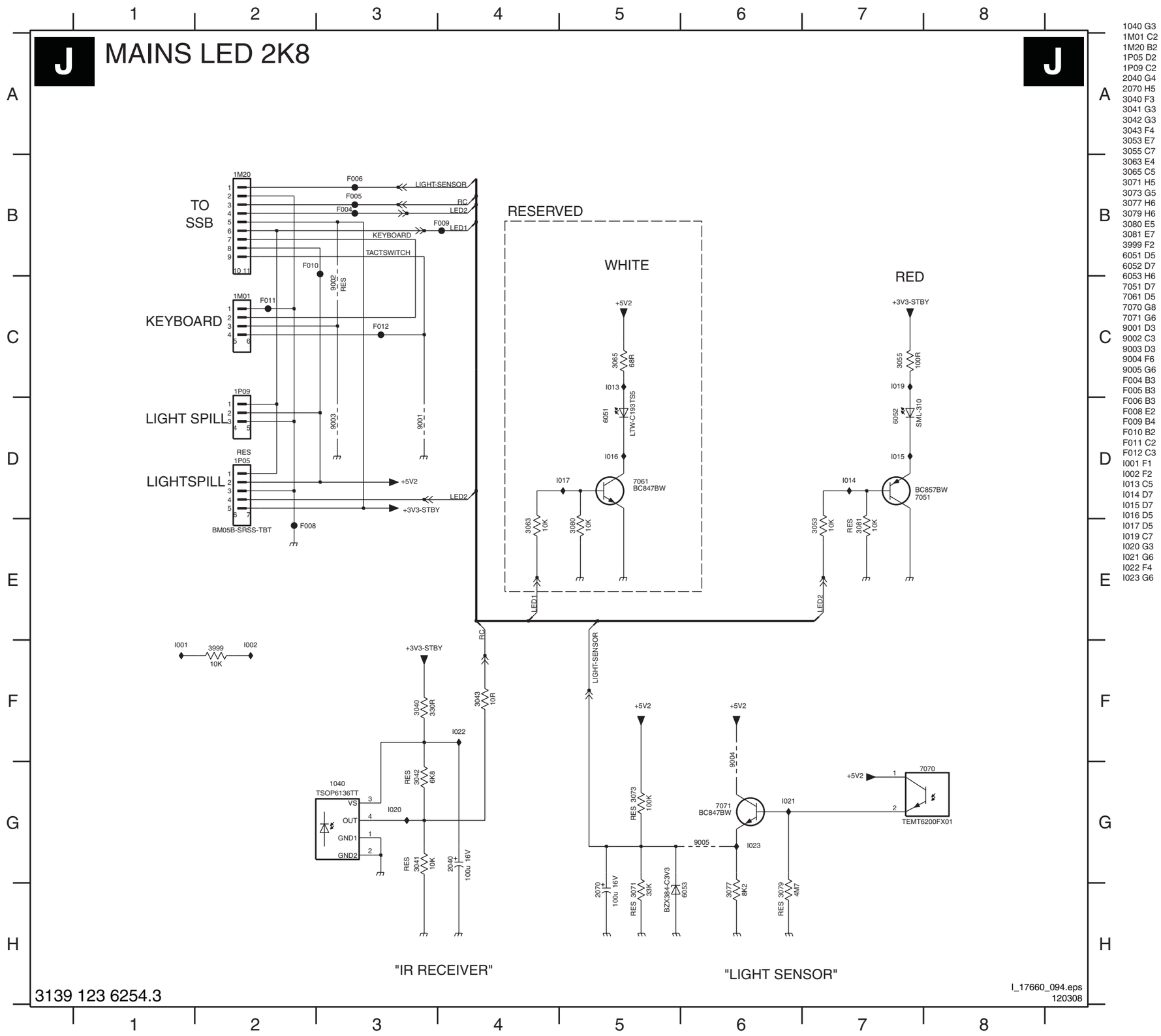


Layout AmbiLight Interface Panel (Top Side)

9M00 --



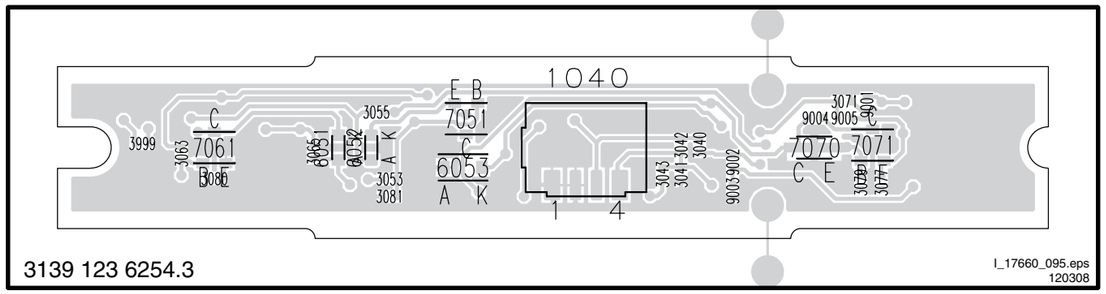
IR & LED Panel (VE)



1040 G3
1M01 C2
1M20 B2
1P05 D2
1P09 C2
2040 G4
2070 H5
3040 F3
3041 G3
3042 G3
3043 F4
3053 E7
3055 C7
3063 E4
3065 C5
3071 H5
3073 G5
3077 H6
3079 H6
3080 E5
3081 E7
3999 F2
6051 D5
6052 D7
6053 H6
7051 D7
7061 D5
7070 G8
7071 G6
9001 D3
9002 C3
9003 D3
9004 F6
9005 G6
F004 B3
F005 B3
F006 B3
F008 E2
F009 B4
F010 B2
F011 C2
F012 C3
I001 F1
I002 F2
I013 C5
I014 D7
I015 D7
I016 D5
I017 D5
I019 C7
I020 G3
I021 G6
I022 F4
I023 G6

Layout IR & LED Panel (VE) (Top Side)

1040 -- 3042 -- 3055 -- 3071 -- 3080 -- 6051 -- 7051 -- 7071 -- 9003 --
3040 -- 3043 -- 3063 -- 3077 -- 3081 -- 6052 -- 7061 -- 9001 -- 9004 --
3041 -- 3053 -- 3065 -- 3079 -- 3999 -- 6053 -- 7070 -- 9002 -- 9005 --

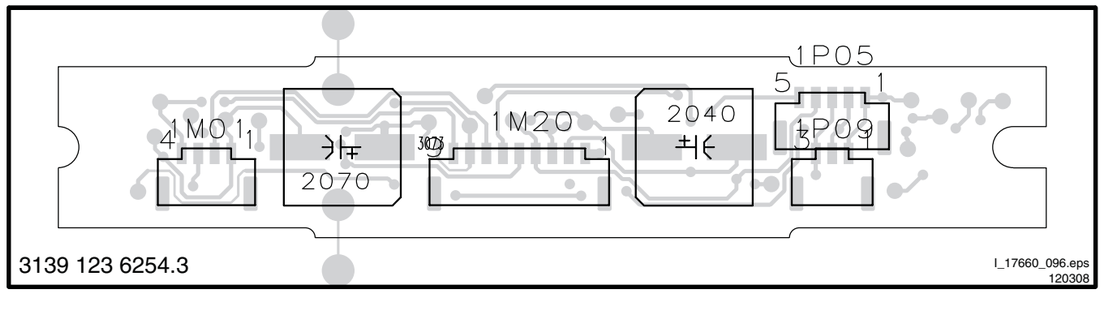


3139 123 6254.3

I_17660_095.eps
120308

Layout IR & LED Panel (VE) (Bottom Side)

1M01 -- 1M20 -- 1P05 -- 1P09 -- 2040 -- 2070 -- 3073 --



3139 123 6254.3

I_17660_096.eps
120308

Personal Notes:

E_06532_012.eps
131004

IR & LED (ME) Panel

J MAINS LED 2K8 **J**

TO SSB
1M20
F006 LIGHT-SENSOR
F005 RC
F004 LED2
F009 LED1
KEYBOARD
TACTSWITCH
F010
9002 RES
1M01
KEYBOARD
F011
F012
9003
9001
1P09
LIGHT SPILL
+5V2
+3V3-STBY
F008

WHITE
+5V2
3065 330R
I013
6051 LTW-C193TS5
I016
I017
7061 BC847BW
3063 10K
RES 3080 10K
LED1

RED
+3V3-STBY
3055 47R
I019
6052 SML-310
I015
I014
BC857BW 7051
3053 10K
RES 3081 10K
LED2

I001 3999 10K I002

RC
LIGHT-SENSOR

+3V3-STBY
3040 330R
3043 10R
I022
1040 TSOP6136TT
VS 3
OUT 4
GND1 1
GND2 2
I020
RES 3042 6K8
RES 3041 10K
2040 100u 16V

+5V2
RES 3073 100K
2070 100u 16V
RES 3071 33K
BZX384-C2V7 6053

+5V2
9004
7071 BC847BW
I021
9005
I023
3077 8K2
RES 3079 4M7

+5V2
7070
TEMT6200FX01

"IR RECEIVER"

"LIGHT SENSOR"

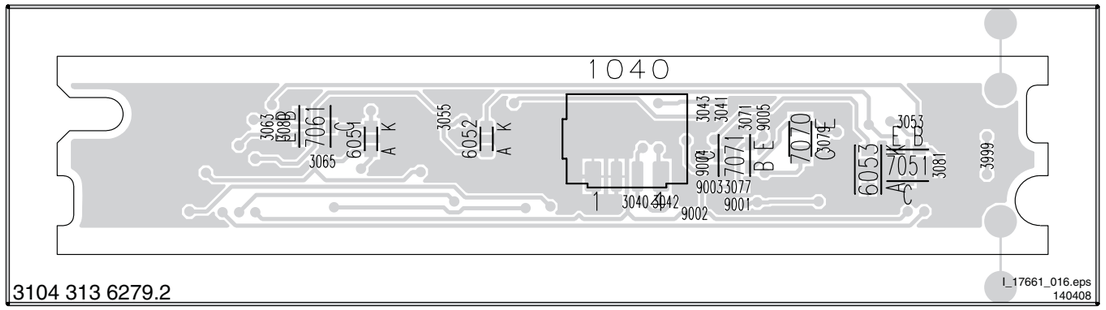
3104 313 6279.2

I_17661_015.eps
140408

1040 G3
1M01 C2
1M20 B2
1P09 D2
2040 G4
2070 H5
3040 F3
3041 G3
3042 G3
3043 F4
3053 E7
3055 C7
3063 E4
3065 C5
3071 H5
3073 G5
3077 H6
3079 H6
3080 E5
3081 E7
3999 F2
6051 D5
6052 D7
7051 D7
7061 D5
7070 G8
7071 G6
9001 C3
9002 C2
9003 C2
9004 F6
9005 G6
F004 B3
F005 B3
F006 B3
F008 D2
F009 B3
F010 B2
F011 C2
F012 C3
I001 F1
I002 F2
I013 C5
I014 D7
I015 D7
I016 D5
I017 D5
I019 C7
I020 G3
I021 G6
I022 F4
I023 G6

Layout IR & LED Panel (ME) (Top Side)

1040 -- 3042 -- 3055 -- 3071 -- 3080 -- 6051 -- 7051 -- 7071 -- 9003 --
3040 -- 3043 -- 3063 -- 3077 -- 3081 -- 6052 -- 7061 -- 9001 -- 9004 --
3041 -- 3053 -- 3065 -- 3079 -- 3999 -- 6053 -- 7070 -- 9002 -- 9005 --

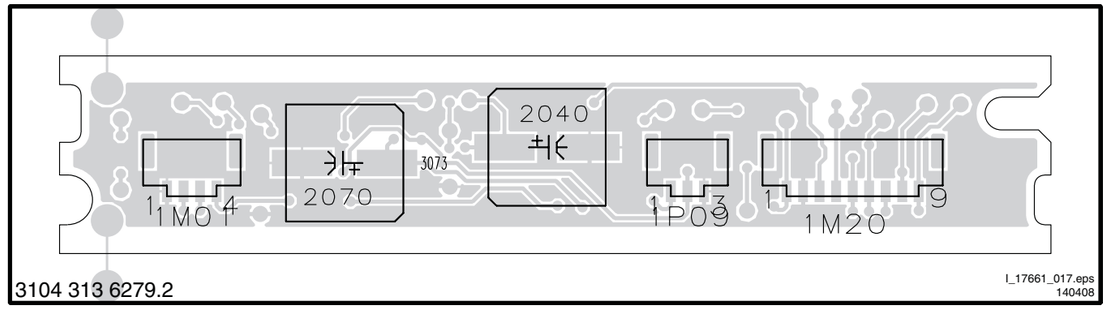


3104 313 6279.2

I_17661_016.eps
140408

Layout IR & LED Panel (ME) (Bottom Side)

1M01 -- 1M20 -- 1P09 -- 2040 -- 2070 -- 3073 --



3104 313 6279.2

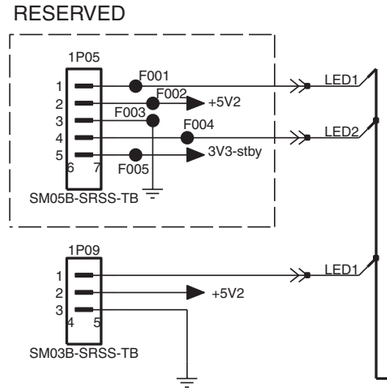
I_17661_017.eps
140408

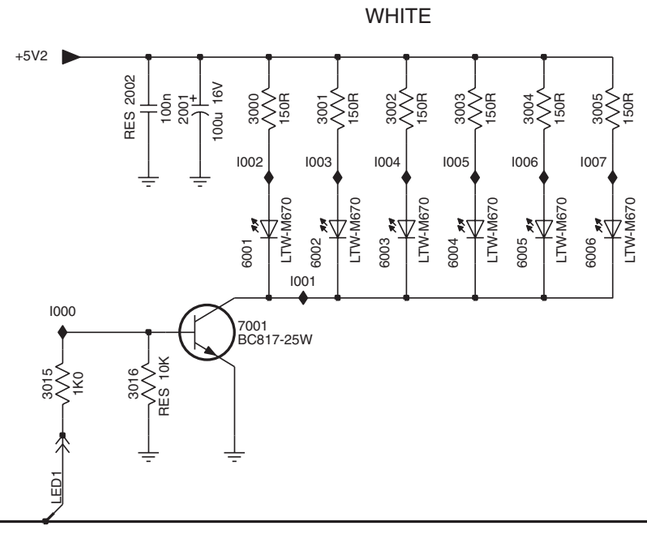
Personal Notes:

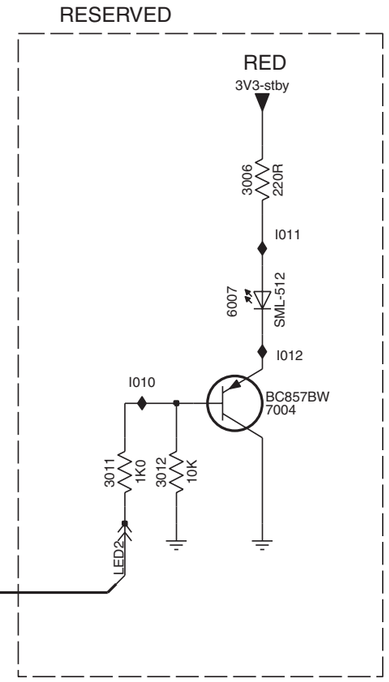
E_06532_012.eps
131004

Light Guide Panel

LIGHT GUIDE PANEL



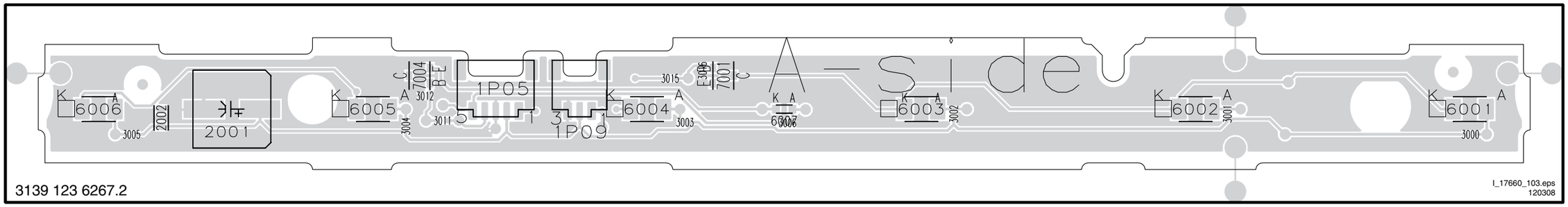




3139 123 6267.2

I_17660_102.eps
290408

Layout Light Guide Panel (Bottom Side)



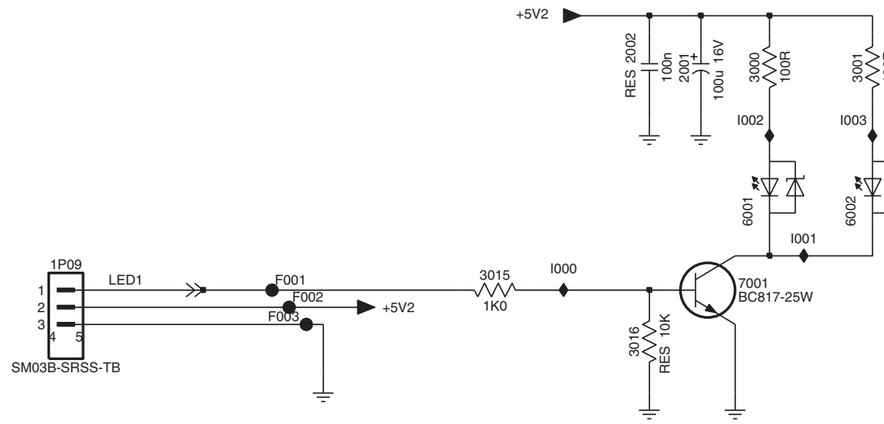
3139 123 6267.2

I_17660_103.eps
120308

Light Guide Panel (32")

LIGHT SPILL 32" ME 2K8

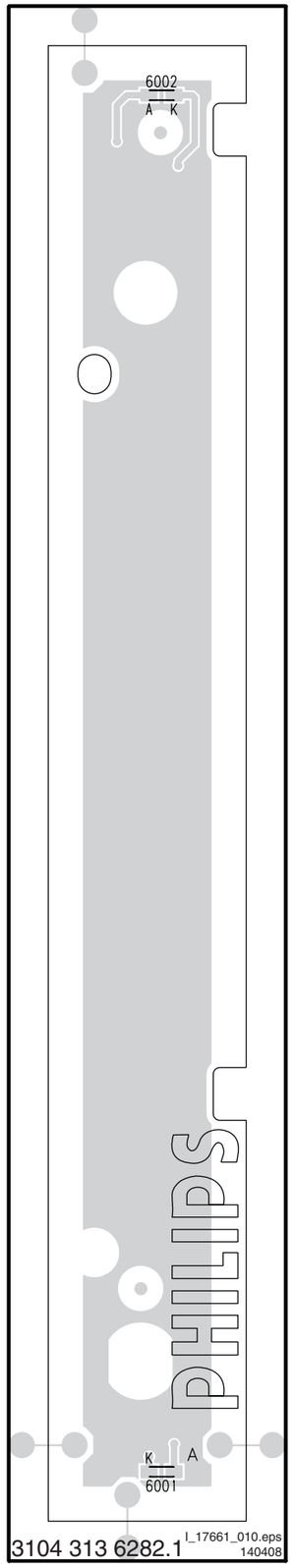
1P09 C2
2001 B4
2002 B3
3000 B4
3001 B4
3015 C3
3016 C3
6001 B4
6002 B4
7001 C4
F001 C2
F002 C2
F003 C2
I000 C3
I001 C4
I002 B4
I003 B4



3104 313 6282.1

I_17661_009.eps
140408

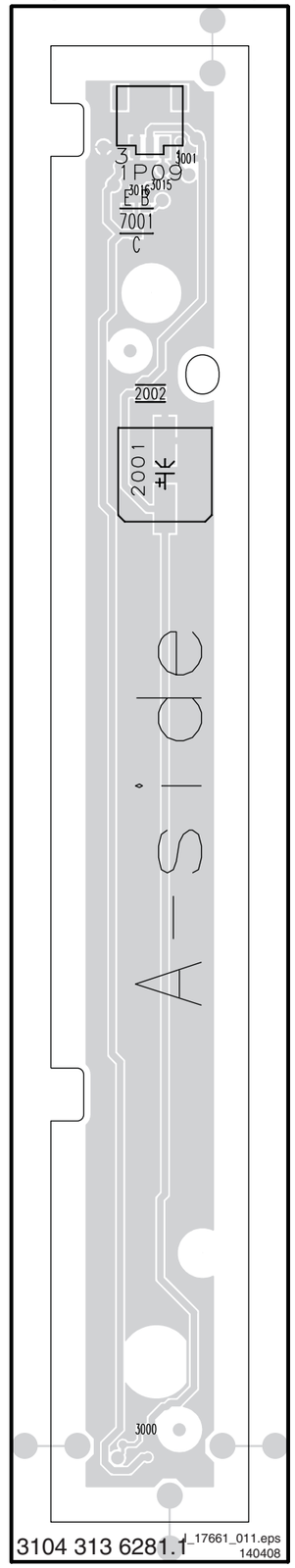
Layout Light Guide Panel (32") (Top Side)



6001 - -
6002 - -

3104 313 6282.1 I_17661_010.eps 140408

Layout Light Guide Panel (32") (Bottom Side)



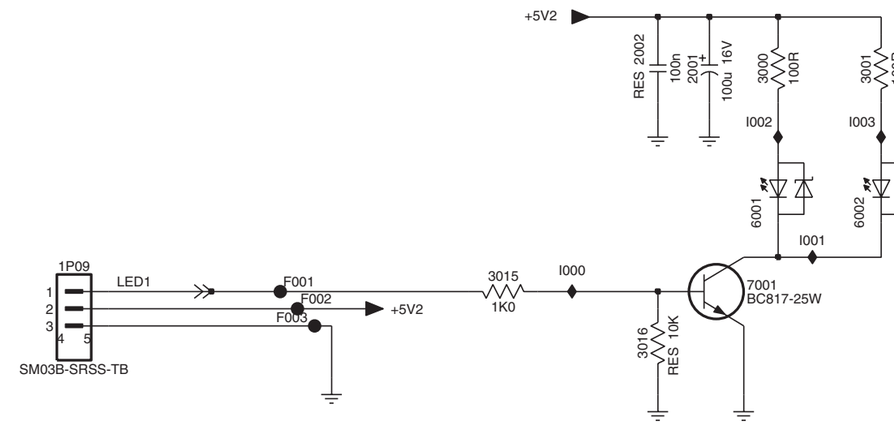
1P09 - -
2001 - -
2002 - -
3000 - -
3001 - -
3015 - -
3016 - -
7001 - -

3104 313 6281.1 I_17661_011.eps 140408

Light Guide Panel (42")

LIGHT SPILL 42" ME 2K8

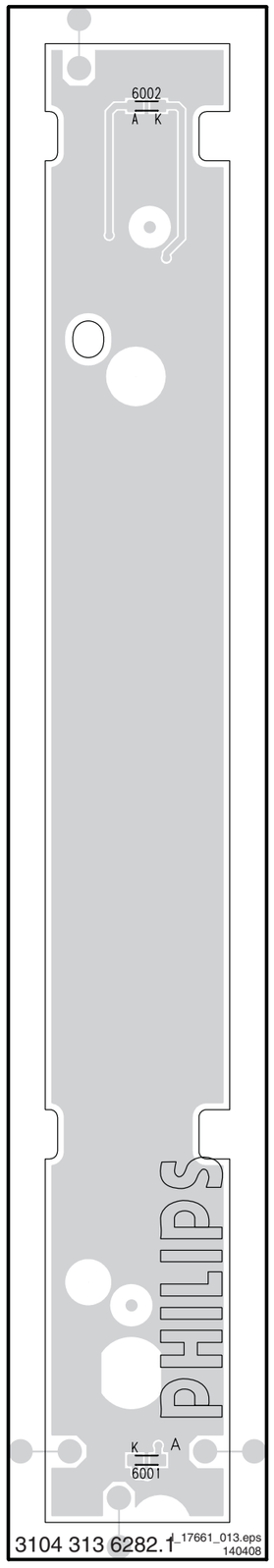
1P09 C2
2001 B4
2002 B3
3000 B4
3001 B4
3015 C3
3016 C3
6001 B4
6002 B4
7001 C4
F001 C2
F002 C2
F003 C2
I000 C3
I001 C4
I002 B4
I003 B4



3104 313 6281.1

I_17661_012.eps
140408

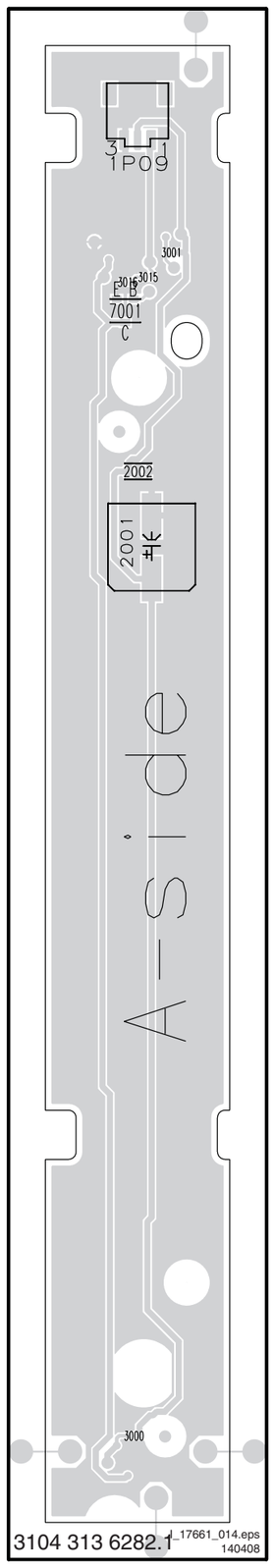
Layout Light Guide Panel (42") (Top Side)



6001 - -
6002 - -

3104 313 6282.1 I_17661_013.eps 140408

Layout Light Guide Panel (42") (Bottom Side)



1P09 - -
2001 - -
2002 - -
3000 - -
3001 - -
3015 - -
3016 - -
7001 - -

3104 313 6282.1 I_17661_014.eps 140408

Personal Notes:

E_06532_013.eps
131004

8. Alignments

Index of this chapter:

Note: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:
- Power supply voltage (depends on region):
  - AP-NTSC: 120 V_{AC} or 230 V_{AC} / 50 Hz (± 10%).
  - AP-PAL-multi: 120 - 230 V_{AC} / 50 Hz (± 10%).
  - EU: 230 V_{AC} / 50 Hz (± 10%).
  - LATAM-NTSC: 120 - 230 V_{AC} / 50 Hz (± 10%).
  - US: 120 V_{AC} / 60 Hz (± 10%).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 15 minutes.
- Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO_GND).
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

8.1.1 Alignment Sequence

- First, set the correct options:
  - In SAM, select “Options”, and then “Option numbers”.
  - Fill in the option settings for “Group 1” and “Group 2” according to the set sticker (see also paragraph “Option Settings”).
  - Press OK on the remote control **before** the cursor is moved to the left.
  - In submenu “Option numbers” select “Store” and press OK on the RC.
    OR:
  - In main menu, select “Store” again and press OK on the RC.
  - Switch the set to Stand-by.
- Warming up (>15 minutes).

8.2 Hardware Alignments

Not applicable.

8.3 Software Alignments

Put the set in SAM mode (see Chapter 5 “Service Modes, Error Codes and Fault Finding”). The SAM menu will now appear on the screen. Select ALIGNMENTS and go to one of the sub menus. The alignments are explained below.

The following item can be aligned:
- Whitepoint.

To store the data:
- Press OK on the RC **before** the cursor is moved to the left.
- In main menu select “Store” and press OK on the RC.
- Press MENU on the RC to switch back to the main menu.
- Switch the set to stand-by mode.

For the next alignments, supply the following test signals via a video generator to the RF input:
- **EU/AP-PAL** models: a PAL B/G TV-signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz
- **US/AP-NTSC** models: an NTSC M/N TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).
- **LATAM** models: an NTSC M TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).
- **DVB-T** models: see table “SDM default settings” in chapter 5.

8.3.1 White Point

- Set “Active control” to “Off”.
- Choose “TV menu”, “TV Settings” and then “Picture” and put:
  - “Dynamic contrast” to “Off”.
  - “Colour enhancement” to “Off”.
  - “Light sensor” to “Off” where applicable.
  - “Clear LCD” to “On” where applicable.
  - “Brightness” to “50”.
  - “Colour” to “0”.
  - “Contrast” to “100”.
- Go to the SAM and select “Alignments”-> “Whitepoint”.

White point alignment LCD screens:
- Use a 100% white screen as input signal and set the following values:
  - “Colour temperature”: “Normal”.
  - All “Whitepoint” values to: “127”.
  - “Red BL offset” values to “8”.
  - “Green BL offset” values to “8”.

In case you have a colour analyser:
- Measure with a calibrated (phosphor- independent) colour analyser in the centre of the screen. Consequently, the measurement needs to be done in a dark environment.
- Adjust the correct x,y coordinates (while holding one of the White point registers R, G or B on 127) by means of decreasing the value of one or two other white points to the correct x,y coordinates (see table “White D alignment values”). Tolerance: dx: ± 0.004, dy: ± 0.004.
- Repeat this step for the other colour temperatures that need to be aligned.
- When finished press OK on the RC and then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 8-1 White D alignment values

Value	Cool (11000 K)	Normal (9000 K)	Warm (6500 K)
x	0.278	0.289	0.314
y	0.278	0.291	0.319

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production (statistics).
- Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
- Set the RED, GREEN and BLUE default values according to the values in the “Tint settings” table.
- When finished press OK on the RC, then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 8-2 Tint settings

Colour Temp.	R	G	B
Cool	113	119	123
Normal	124	117	115
Warm	127	105	77

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I^2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

Notes:
- After changing the option(s), save them by pressing the OK button on the RC **before** the cursor is moved to the left, select STORE in the SAM root menu and press OK on the RC.
- The new option setting is only active after the TV is switched “off” / “stand-by” and “on” again with the Mains switch (the NVM is then read again).

8.4.2 Dealer Options

For dealer options, in SAM select “Dealer options” and then “Personal options”.

Table 8-3 Dealer options

Menu item	Subjects	Options	Description
Personal Options	Picture Mute	On	Picture is muted / not muted in case no input signal is detected at input connectors
		Off	
	Virgin Mode	On	TV starts up / does not start up (once) with a language selection menu after the Mains switch is turned “on” for the first time (virgin mode)
		Off	

8.4.3 (Service) Options

Select the sub menu's to set the initialization codes (options) of the set via text menus.

Table 8-4 Service options

Menu-item	Subjects	Options	Description
PIP/DS	Dual Screen	None	No DS
		One tuner dual screen	One tuner DS
		Two tuner dual screen	Two tuner DS
Display	Screen	“Value”	Used screen size, type, and resolution (see table “Option code overview” in this chapter)
	Dimming Backlight	On / Off	Feature present / not present
Video Repro	Perfect Pixel	On / Off	Perfect Pixel On / Off
	Ambient Light	Off / Mono / Stereo/Triple / Quad	Inverter not present / one inverter / two inverters / three inverters / four inverters
	Ambient Light technology	CCFL / LED	CCFL / LED
	Ambient Light driver	Pacific 3 / MOP / DFI	Ambient Light driver
	MOP	Present / Not present	MOP present / not present
	Light sensor	Present / Not present	MOP present / not present
	Light sensor type	Step / ME7 / MS7 / ME8 / Canvas / Aurea	Styling
Source selection	HDMI 3	Present / Not present	HDMI 3 Present / Not present
	HDMI CEC	On / Off	HDMI CEC On/ Off
Audio Repro	Acoustic System (Cabinet design, used for setting dynamic audio parameters)	None	
		Top A 2k8	
		MS7 model A 2k8	
		MS7 model B 2k8	
		ME7 32" 2k8	
		ME7 model A 2k8	
		ME7 model B 2k8	
		Step 63 Combat Coscone 2k8	
		Aurea	
		ME8	
Miscellaneous	Tuner Type	TD1736 / TD1716	TD1736 = US, TD1716 = Europe
	Nyquist SAW filter	On / Off	SAW filter on/off
	I^2C configuration	with PCA9540 / with PCA9515 / via channel decoder	
	Upgrade assistant	Present / Not present	
Opt. no.	Group 1		xxxxx xxxxx xxxxx xxxxx (see set sticker)
	Group 2		xxxxx xxxxx xxxxx xxxxx (see set sticker)
	Store	Store	

8.4.4 Opt. No. (Option numbers)

Select this sub menu to set all options at once (expressed in two long strings of numbers).
An option number (or “option byte”) represents a number of different options. When you change these numbers directly, you can set all options very quickly. All options are controlled via eight option numbers.
When the NVM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on a sticker inside the TV set and in Table “Option code overview”.

Example: The options sticker gives the following option numbers:
- 04368 00005 01066 08707
- 00000 00032 00512 00000

The first line (group 1) indicates hardware options 1 to 4, the second line (group 2) indicates software options 5 to 8.
Every 5-digit number represents 16 bits (so the maximum value will be 65536 if all options are set).
When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number.
See tables “Option code overview” for the options.

Diversity
Not all sets with the same Commercial Type Number (CTN) necessarily have the same option code!

Use of Alternative BOM
An alternative BOM number usually indicates the use of an alternative display or power supply. This results in another display code thus in another Option code. For the power supply there is no difference. Refer to chapter 2 “Safety Instructions, Warnings, and Notes”.

8.4.5 Option Code Overview

Table 8-5 Option code overview

CTN_alt BOM#	Options Group 1	Options Group 2	Displ. (code)
32PFL7623D/10_1	57617 38153 37983 45160	10120 23840 00137 00000	136
32PFL9603D/10_1	57617 36099 38623 45160	10136 23842 00145 00000	152
32PFL9603D/10_2	57617 36099 38623 45160	10131 23842 00145 00000	147
37PFL9603D/10_1	57617 36099 38623 45160	10125 23842 00129 00000	141
42PFL7403D/10_1	24833 37125 37983 45160	10126 23840 00138 00000	142
42PFL7403D/79_1	24833 37125 37983 45165	10126 20512 00139 00000	142
42PFL7403S/60_1	24833 37125 37983 45160	10126 23840 00138 00000	142
42PFL7423D/12_1	24833 37125 38623 45160	10126 23842 00138 00000	142
42PFL7423H/12_1	25089 37125 38623 45160	10126 23974 00170 00000	142
42PFL7433D/12_1	24833 37125 38623 45160	10126 23842 00138 00000	142
42PFL7433S/60_1	24833 35077 38623 45160	10126 23842 00138 00000	142
42PFL7623D/10_1	57617 38151 37983 45160	10114 23840 00153 00000	130
42PFL9603D/10_1	57617 34051 38623 45160	10126 23842 00129 00000	142
42PFL9603H/10_1	57873 34051 37599 45160	10126 23974 00161 00000	142
42PFL9703D/10_1	57633 34051 38623 45160	10127 23842 00129 00000	143
42PFL9703D/79_1	24833 34051 38623 45165	10127 21538 00129 00000	143
47PFL7403D/10_1	24833 37125 37983 45160	10129 23840 00138 00000	145
47PFL7403D/79_1	24833 37125 38111 45165	10129 20512 00139 00000	145
47PFL7403D/79_2	24833 37125 38111 45165	10129 20512 00139 00000	145
47PFL7623D/10_1	57617 38153 37983 45160	10120 20768 00137 00000	136
47PFL9603D/10_1	57617 34051 38623 45160	10129 23842 00129 00000	145
47PFL9603D/10_2	57617 34051 38623 45160	10129 23842 00129 00000	145
47PFL9703D/10_1	57633 34051 38623 45160	10130 23842 00129 00000	146
47PFL9703D/10_2	57633 34051 38623 45160	10130 23842 00129 00000	146
47PFL9703D/79_1	24833 34051 38623 45165	10130 21538 00129 00000	146
52PFL9703D/10_1	57633 34051 38623 45160	10134 23842 00129 00000	150

Important: after having edited the option numbers as described above, you **must** press OK on the remote control **before** the cursor is moved to the left!

8.5 Reset of Repaired SSB

A very important issue towards a repaired SSB from a service repair shop, implies the reset of the NVM on the SSB.

A repaired SSB in service should get the service Set type “00PF0000000000” and Production code “00000000000000”. Also the virgin bit is to be set. To set all this, you can use the ComPair tool.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the wiring, block (chapter 6) and circuit diagrams (chapter 7). Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

This chassis (member of the “TV522/92” platform) is a derivative from the Q528.1E LA chassis (member of the “TV520” platform). It comes with a two new stylings called “ME8” for sets from the xxPFL7xxx series and “VE8” for sets from the xxPFL9xxx series. In some sets, a light strip is incorporated on the front side of the set referred to as “Light Guide”. This generates a diffuse light through a light pipe.
The platform incorporates an improved (faster tuning, better phase noise performance, etc.) tuner block with separate support for DVB-C and DVB-T.
It’s built around the PNX85xx “System on Chip” (SoC), which handles the video and audio processing, while the PNX51xx takes care of the video back-end processing. The Spartan-3 FPGA is used to process the data for the Pixelated AmbiLight units and can run the two, three and four sided AmbiLight versions.

9.1.1 Features

The main features for this chassis are:

- 1080p resolution @ 100 Hz (in some sets).
- High performance back-end processing Perfect Pixel HD engine capable of 300 Mpixels/sec. With this technology, each pixel of the incoming picture is enhanced to better match the surrounding pixels, resulting in a more natural picture. Artifacts and noise in all sources from multimedia to standard TV to highly-compressed high-definition (HD) are detected and reduced. This results in a clean and razor sharp image.
- ClearLCD, a technology that uses scanning and back light dimming technology to reduce the motion blur on an LCD screen, caused by the slow response time and the “sample and hold” characteristic of LCD.
- The introduction of a module referred to as “Light Guide” on the front side of the set (in some sets).
- The introduction Pixelated LED AmbiLight (in some sets).
- Improved tuner compared to Q528.1E LA chassis
- Support of DVB-C reception (in some sets).
- For all other features: refer to the Q528.1E LA/LB Service Manual.

9.1.2 TV522/92 Architecture Overview

For details about the chassis block diagrams refer to chapter “Block diagrams, Test Point Overview, and Waveforms”. An overview of the TV522/92 architecture can be found in next figure “Architecture of TV522/92 platform”.
Sets with all resolutions @ 50 Hz use the PNX85xx SoC and the PNX5100 Video Back-end Processor for video processing. With the same configuration, a resolution of 1366 × 768p @ 100 Hz, or even 1920 × 1080p @ 100 Hz can be achieved.

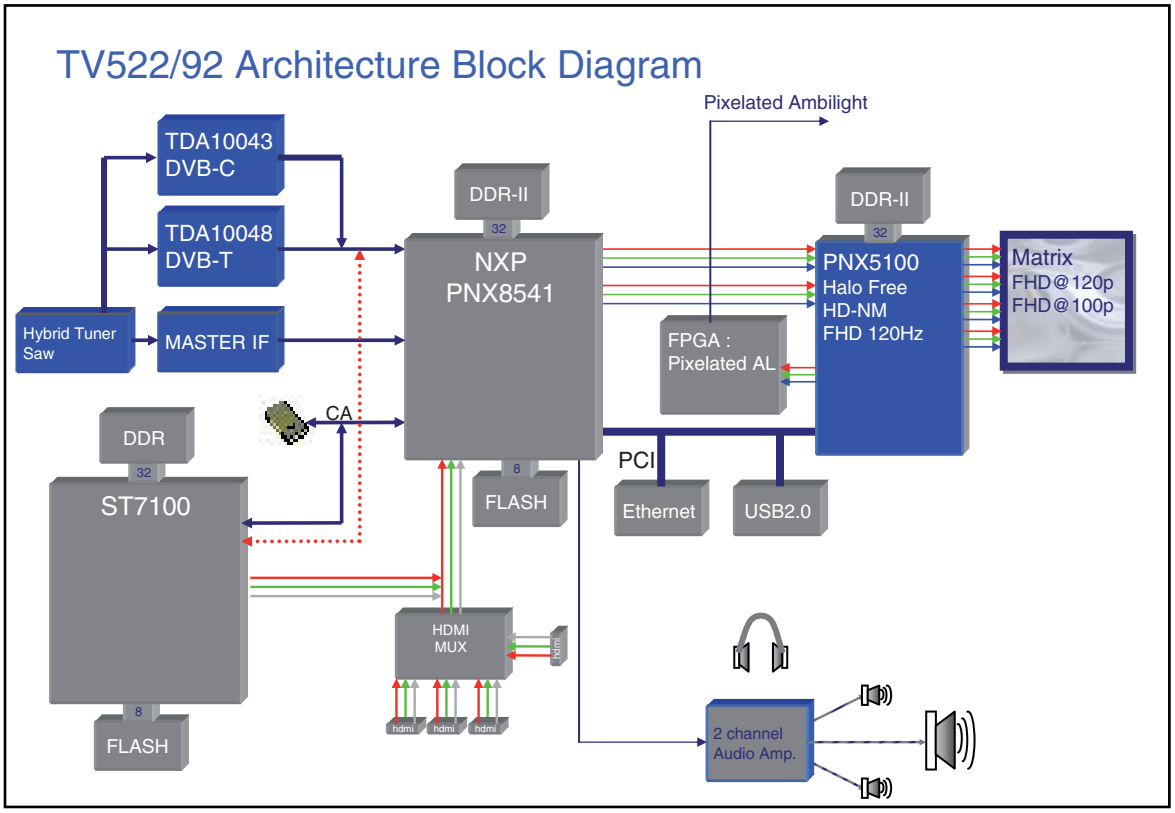


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Figure 9-1 Architecture of TV522/92 platform

9.1.3 SSB Cell Layout

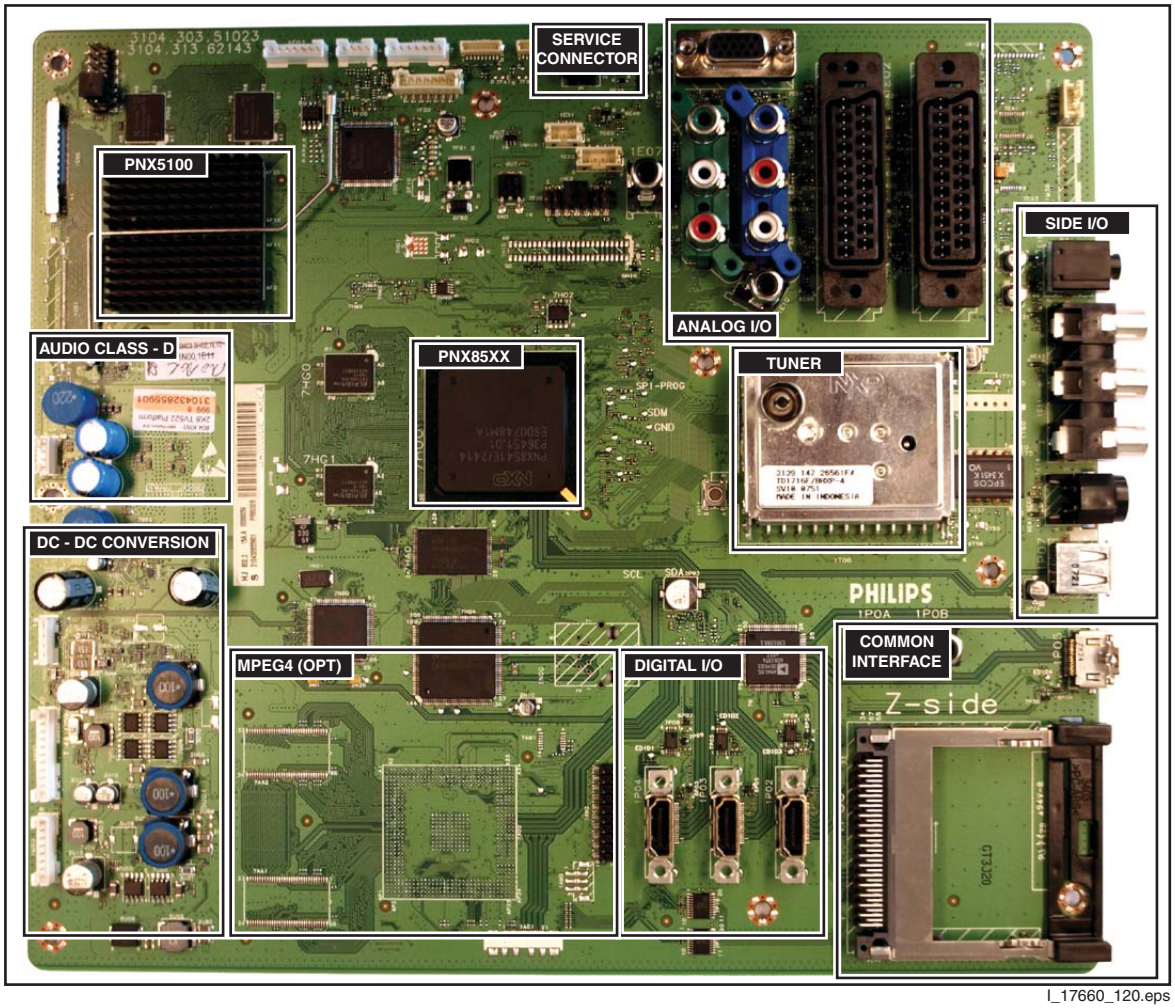

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Figure 9-2 SSB top view

9.2 Main Supply

9.2.1 32" Sets

The 32" sets in this chassis can come with two different buy-in Delta supply units:
- DPS-230B
- DPS-182CP A.

When defective, a new panel must be ordered and the defective panel must be sent for repair, unless the main fuse of the panel is broken. Always replace a defective fuse with one with the correct specifications! This part is available in the regular market.
Refer to the Spare Parts list for the order number of the supply unit.

DPS-230B
The supply unit delivers the following voltages to the chassis:
- 60/24V_I and 12V_I(connector CN2, LCD panel, 3 pins)
- 24V_A (connector CN4, Ambilight, 6 pins).
- 12 V_B (connector CN5, Bolt-on, 4 pins)
- +12 V_B (connector CN5a, Bolt-on provisional, 4 pins)
- 3.3 V_{SB}, 12 V_{SSB}, +12 V_{audio} and -12 V_{audio} (connector CN6, SSB, 11 pins)
- +12 V_{SSB} (connector CN7, SSB, 8 pins).

DC output protections - Short Circuit Protection
The 3.3 V standby power circuit has short circuit protection with an auto restart function and an over voltage protection which operates within a range of 120 to 140% of the nominal value.
In case a short-circuit situation occurs at the 12 V, 12 V_B or 24 V_A output the over voltage protection operates within a range of 120 to 140% of the nominal value.
In case a short-circuit situation occurs at one of the + 12 V_A or - 12 V_A outputs, the over voltage protection intervenes at a maximum value of 19 V.
In case a short-circuit situation occurs at the 24 V_{INV} output, the supply unit will auto-recover when the fault condition is removed. It operates within a range of 120 to 140% of the nominal value.

DPS-182CP A
The supply unit delivers the following voltages to the chassis:
- 24 V_{inv}(connector CN2 and CN3, LCD panel, 14 and 12 pins)
- 24 V_A (connector CN4, Ambilight, 6 pins).
- 12 V_B (connector CN5, Bolt-on, 4 pins)
- +12 V_B (connector CN5a, Bolt-on provisional, 4 pins)
- 3.3 V_{SB}, 12 V, +12 V_{audio} and -12 V_{audio} (connector CN6, SSB, 11 pins)
- +12 V (connector CN7, SSB, 8 pins).

DC output protections - Short Circuit Protection
The 3.3 V standby power circuit has short circuit protection with an auto restart function and an over voltage protection which operates within a range of 120 to 140% of the nominal value.
In case a short-circuit situation occurs at the 12 V, 12 V_B or 24 V_A output the over voltage protection operates within a range of 120 to 140% of the nominal value.
In case a short-circuit situation occurs at one of the + 12 V_A or - 12 V_A outputs, the over voltage protection intervenes at a maximum value of 19 V.
In case a short-circuit situation occurs at the 24 V_{INV} output, the supply unit will auto-recover when the fault condition is removed. It operates within a range of 120 to 140% of the nominal value.

9.2.2 37" and 42" Sets

The 37" and 42" sets in this chassis come with a IPB supply unit. The difference between both is the adjustment of the lamp current in the high-voltage inverter: 120 mA for 37" and 135 mA for 42" panels, adjustable with potentiometer 3224 (diagram A2).
Refer to the Spare Parts list for the order number of the supply unit.

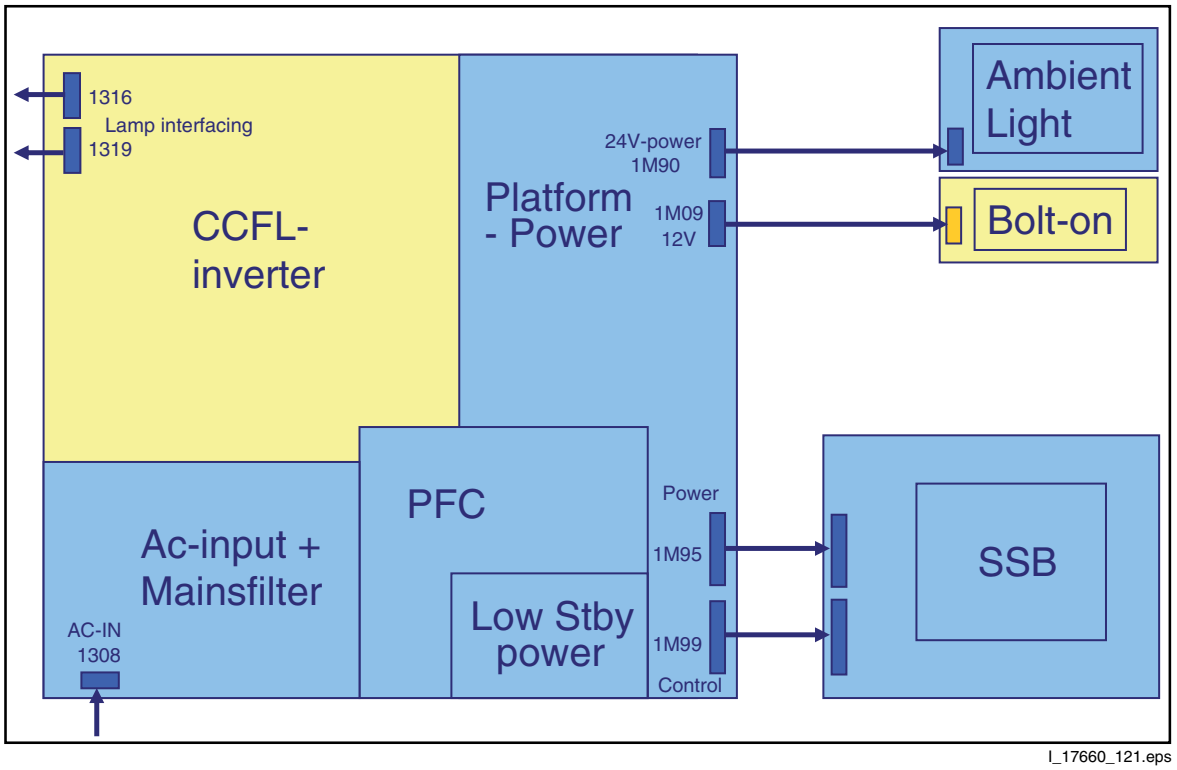

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Figure 9-3 High level Power Architecture IPB42

The supply unit delivers the following voltages to the chassis:

Pin	1316	1319	1M09	1M90	1M95	1M99
1	HVR	HVL	+12V	+24V	+3V3standby	+12V
2	HVR	HVL	+12V	GND	Standby	+12V
3	n.c.	n.c.	GND	+24V	GND	GND
4	-	-	GND	GND	GND	GND
5	-	-	-	+24V	GND	Lamp On/Off
6	-	-	-	GND	+12V	DIM
7	-	-	-	-	+12V	Boost
8	-	-	-	-	+12V	Analog/PWM
9	-	-	-	-	+Vsnd	-
10	-	-	-	-	GND	-
11	-	-	-	-	-Vsnd	-

9.2.3 47" Sets

The 47" sets in this chassis come with a buy-in supply unit and is a black-box for Service. When defective, a new panel must be ordered and the defective panel must be sent for repair, unless the main fuse of the panel is broken. Always replace a defective fuse with one with the correct specifications! This part is available in the regular market.
Refer to the Spare Parts list for the order number of the supply unit.

9.3 On-Board Platform Supply

In this platform, an on-board platform supply has been foreseen. This means that the mains voltage, after filtering, is fed to the SSB.

The supply is a Self Oscillating Power Supply (SOPS) and working according to the Quasi Resonant Conversion (QRC) principle. For the on-board DC/DC converters refer to diagrams B01A, B01B and B01C. For a complete description of the On-Board Platform Supply, refer to the Q528.1E LA Service Manual.

9.4 On-board DC/DC Converters

In this platform, on-board DC/DC converters have been foreseen. See also diagrams B01A, B01B and B01C.

9.4.1 PSU Start-up Sequence

1. If the input voltage of the DC/DC converters is around 12 V (measured on the decoupling capacitors 2U01/2U02) and the ENABLE signals are “low” (active), then the output voltages should have their normal values.
2. First, the Stand-by Processor activates the +1V2 supply (via ENABLE-1V2).
3. Then, after this voltage becomes present and is detected OK (about 100 ms), the other voltage of +3V3 will be activated (via ENABLE-3V3).
4. The current consumption of controller IC 7U00 is around 20 mA (that means around 200 mV drop voltage across resistor 3U01).

9.4.2 Internal Protection

- Provides a SUPPLY-FAULT signal (active “low”), when the output voltage of any DC/DC converter is out of its limits (± 10% of the normal value). In such cases, the Stand-by Processor will immediately stop the supplies by sending a “high” control signal towards the external and internal supplies: ENABLE-xVx, POD-MODE, ON-MODE, and STAND-BY.
  Note: The SUPPLY-FAULT control signal is “low” when any DC/DC converter is disabled by its control signal (ENABLE-xVx) and +12VSW is present, therefore it is ignored during start-up!
- The internal protection works together with the output over-voltage detector transistors 7U07-1 and 7U07-2.

9.4.3 1.2V and 3.3V DC/DC Converters

Introduction
The circuit used is a so-called “synchronous buck converter”. Some characteristics:
- Switching frequency: approx. 250 kHz.
- Efficiency: approx. 90%.
- Built-in output over-voltage and over-current protections
- Soft start.
- Software controlled “on/off” (via ENABLE line).

Block diagram

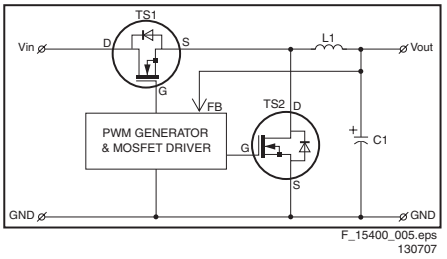

Figure 9-4 Block diagram synchronous buck converter.

The advantage of a “synchronous buck converter” over a “classical buck converter” is its better efficiency (about 90%). The difference between the two is that in a synchronous buck converter the “low -side” diode is replaced by a MOSFET TS2 (item 7U05). This, because the voltage drop across a MOSFET is smaller than the forward voltage drop of a diode.
This second MOSFET TS2 conducts current during the “off” times of the first MOSFET TS1 (item 7U08 at the input side). The upper MOSFET TS1 conducts, to transfer energy from the input to the inductor L_1 and load R_L, while the lower MOSFET TS2 conducts to circulate the inductor current (free wheel). The synchronous PWM control block regulates the output voltage by modulating the conduction intervals of the upper and lower MOSFETs.

PWM Generator and MOSFET Drivers
This circuit is a one-chip solution (item 7U0A). It contains all the circuitry for two independent buck regulators (3V3 and 1V2). The MOSFETs 7U08, 7U02, 7U05 and 7U06 are the switching transistors, they are conducting alternatively.
- Time sequence 1: 7U08/7U02 is conducting; energy is stored in coil 5U01/5U00. The current is flowing from the +12VSW power supply source.
- Time sequence 2: 7U08/7U02 is blocked; energy is stored in coil 5U01/5U00.
- Time sequence 3: 7U05/7U06 is conducting, and the current circuit is now closed via 7U05/7U06, 5U01, 5U00, 2U06/2U0Z/2U07/2U0T/2U0U/2U0V, and the load. So the energy stored in the coil during time sequence T1 is consumed during sequence T3. The signal on the gate 7U05/7U06 is 180 degrees turned compared with the signal on the gate 7U08/7U02.

Voltage Booster
This circuit is build around capacitors 2U29 and 2U26, resistor 3U62/3UA1, diodes 6U01 and 6U00, and transistor 7U03. It generates the +18 V boost voltage on pin 4 of item 7U00, to drive the “high-side” power MOS-FET 7U08/7U02. The voltage is generated only during normal operation of the converter; therefore, any drop in its value means an internal fault condition, which is sensed by the internal protection circuit. The AC component of the voltage on the source of transistor 7U08/7U02 is rectified by the diodes and added to the input voltage, resulting into the boost voltage. The resistor 3U02/3U1K limits the peak current through the rectifier diodes.

Over-current Detection
Over-current detection is done via components 3U05, 3U06, 3U15, 3U14, and 2U04 for the 3.3 V converter and 3U00, 3U01, 3U16, 3U17, and 2U00 for the 1.2 V converter.

Under-voltage Detection
There is an additional circuit (7U01-1, 7U01-2 and 6U04) to switch "Off" the 3.3 V converter in case the +12VS drops below 9 V.

Service Tips
- When a power MOS-FET is found defective, replace the other power MOS-FET as well.
- For a normal operation of the converter, it is important to check the switching frequency and the value of the boost voltage.

9.5 Front-End

Refer to figure "9-1 Architecture of TV522/92 platform" earlier in this chapter for details. Refer also to block diagrams B02A, B02B and B02C.

9.5.1 Device specifications

Tuner (TD1716)
The tuner has the following specifications:
- Hybrid tuner with symmetrical IF output.
- Down conversion from RF to IF frequency (picture carrier 39.875 MHz at analogue reception, centre frequency 36.166 MHz at digital reception).
- AGC control signal is coming from master IF device (TDA9898).
- Only 5 V external supply needed (internal DC-DC conversion to 3.3 V).
- 4 MHz output is used by channel decoder (TDA10048) and master IF device (TDA9898).

The application in this chassis is as follows:
- I^2C address C0.
- Broadband AGC, no IF section.
- I^2C communication buffered via MUX.
- Gain to obtain optimised Master IF input level; AGC control is completely inside the tuner.
- Output level ca. 110 dBµV (for strong input signal).

Repair tip: after replacement of the tuner, the option code should be checked, even when the set appears to function correctly! Refer also to chapter 5 "Service Modes, Error Codes, and Fault Finding".

Master IF (TDA9898)
- Down conversion from IF to low-IF frequency.
- Down conversion from IF to SIF.
- CVBS output.

The application in this chassis is as follows:
- I^2C address 0x86.
- Down conversion from IF to low-IF frequency (5.166 MHz centre frequency).
- Advanced filtering (for further rejection of adjacent channels).
- Gain to obtain optimised channel decoder level. Control signal is coming from channel decoder.

SAW filter

X6874D and X3451K
- Analogue sound for BG, I, DK, L, L'.
- DVB-T (digital reception sound **and** video).

For digital reception, the application in this chassis is as follows:
- Rejection of adjacent channels.
- Switching is done by Master IF (3 inputs).
- One SAW covering both 7 and 8 MHz channels.

X6774D
- Analogue video for BG, I, DK, L, L'.

Channel decoder (TDA10048) DVB-T
The channel decoder has the following specifications:
- I^2C address 0x10.
- Decoding from low-IF to MPEG transport stream.
- During decoding: de-modulation, de-interleaving and error correction.
- External clock buffer required.
- No start-up requirements.
- AGC monitor.

Channel decoder (TDA10023) DVB-C
The channel decoder has the following specifications:
- I^2C address 0x1C.
- Decoding from low-IF to MPEG transport stream.
- During decoding: de-modulation, de-interleaving and error correction.
- External clock buffer required.
- No start-up requirements.
- AGC monitor.

9.5.2 Digital signal processing (front-end)

Refer to figure "9-5 DVB-C signal broadcast reception block diagram" and "9-6 DVB-T signal broadcast reception block diagram" for details of digital signal processing.

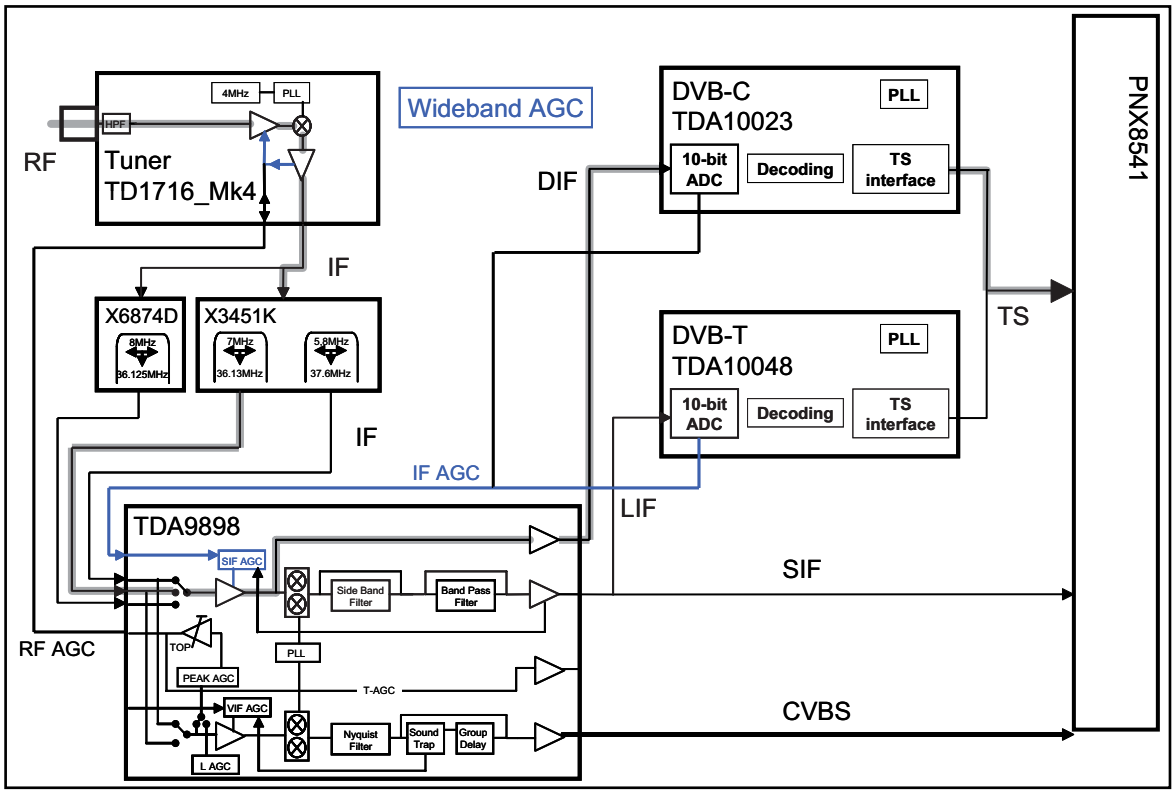

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Figure 9-5 DVB-C signal broadcast reception block diagram

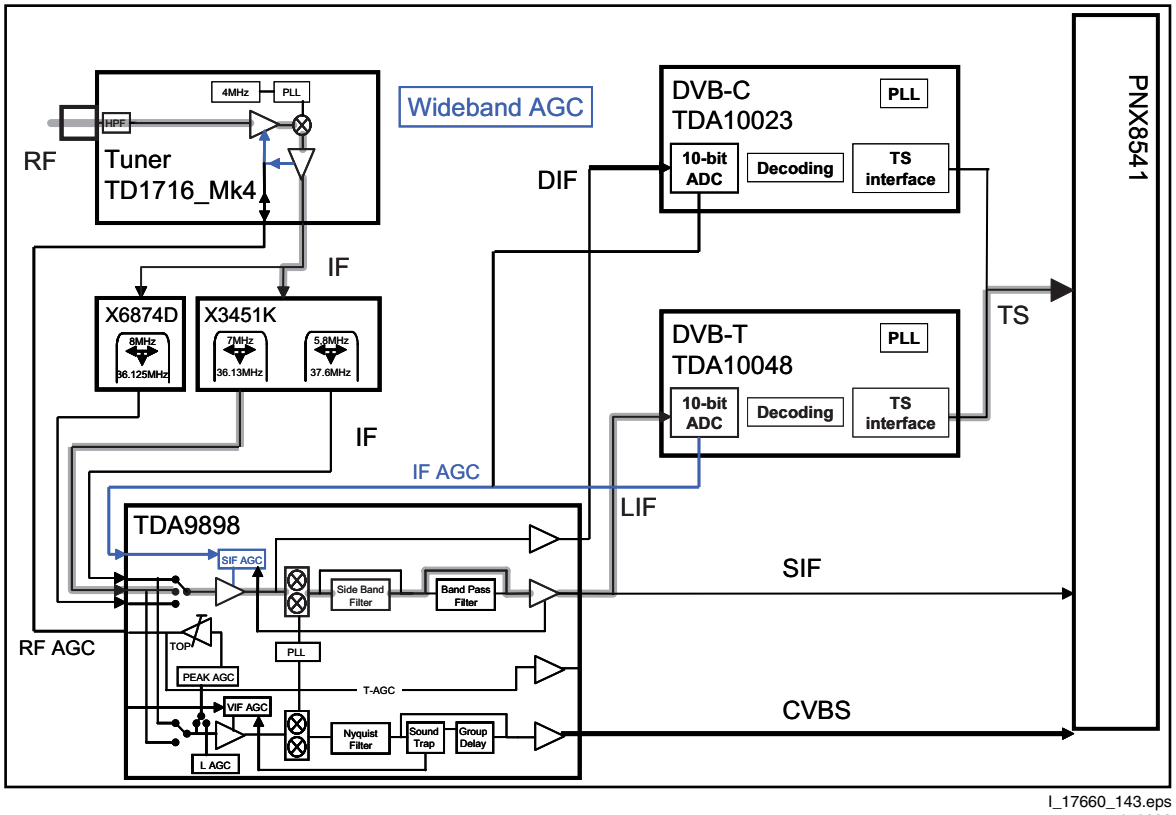

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Figure 9-6 DVB-T signal broadcast reception block diagram

9.5.3 Analogue signal processing (front-end)

Refer to figure “9-7 Analog video broadcast reception block diagram” for details of analogue signal processing.

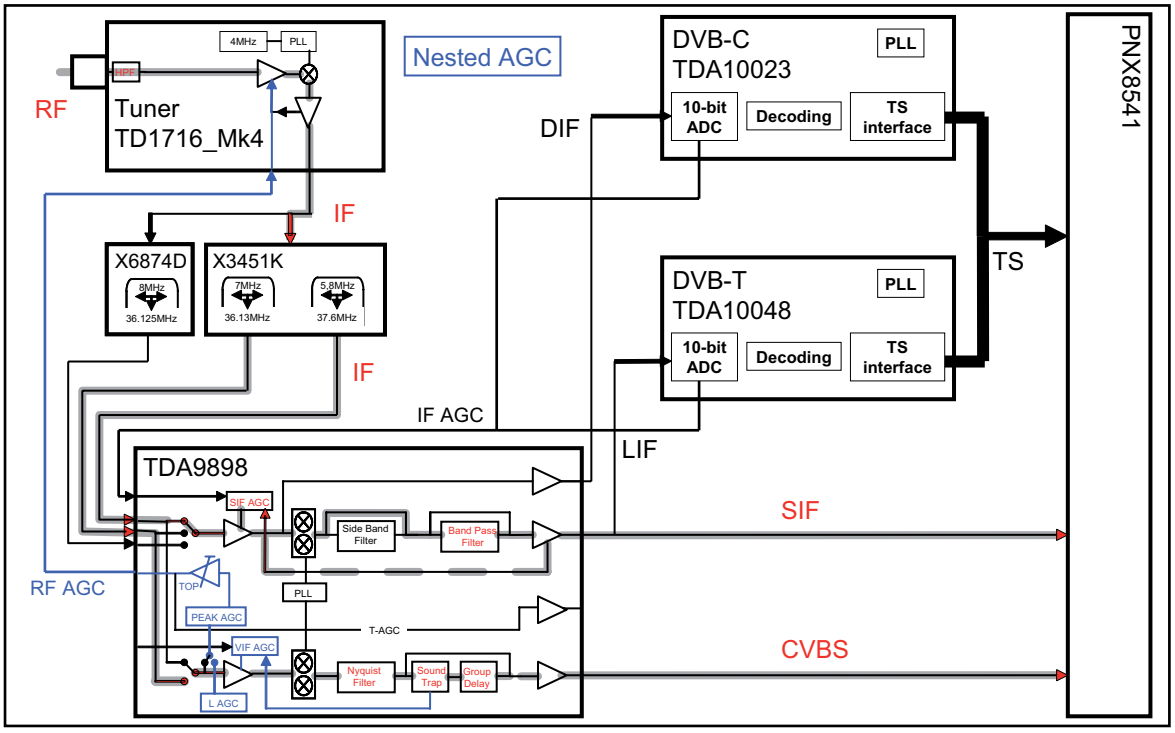

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Figure 9-7 Analog video broadcast reception block diagram

9.6 PNX85xx

In this chassis, the PNX85xx is responsible for the audio/video source decode functions and video improvement processing on both digital and analogue sources. It includes a multi-standard digital video decoder for MPEG2, and a multi-standard analogue video decoder for support of PAL, NTSC, and SECAM standards. Refer to diagram B04 for details.

9.6.1 Video Subsystem

Refer to figure “9-8 PNX85xx video flow diagram” for a clarification of the blocks that are used in this device.

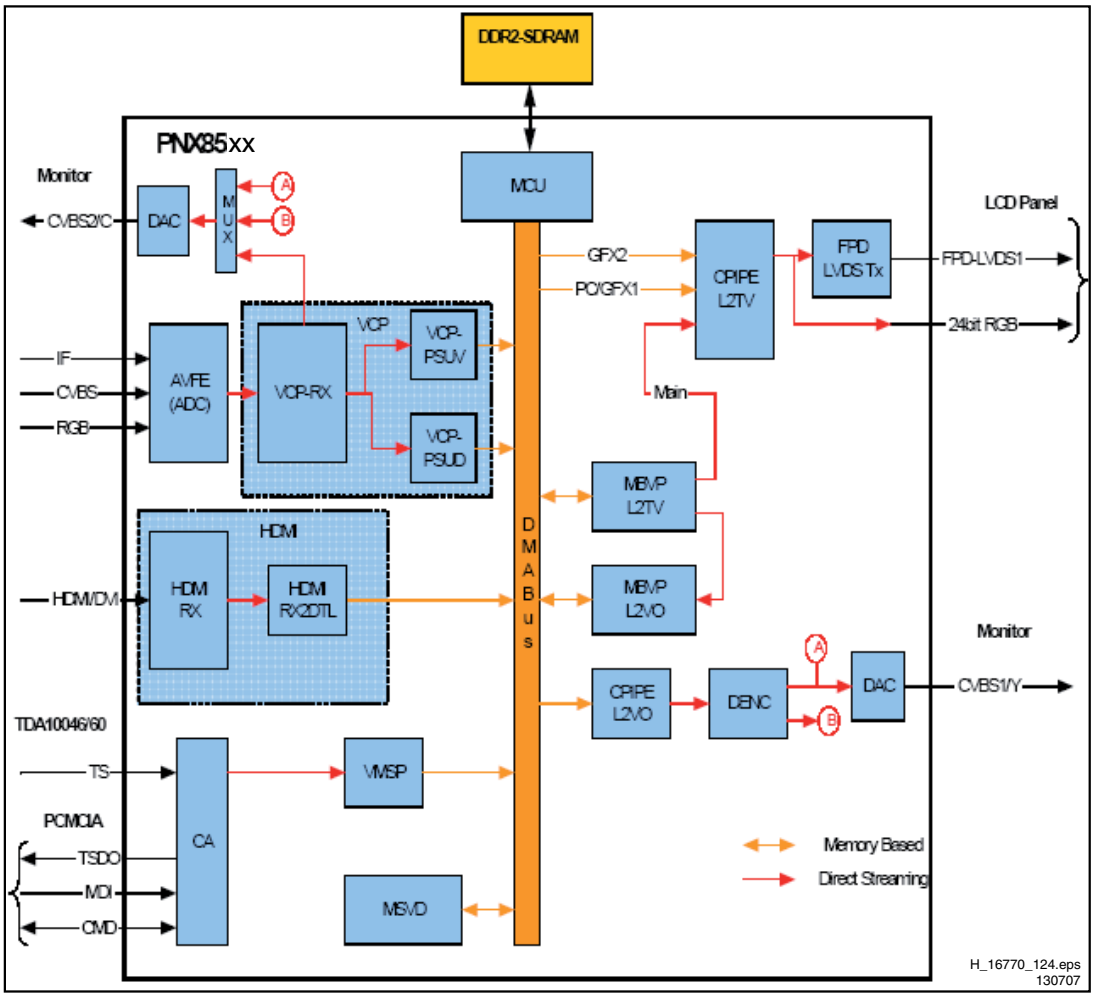

Figure 9-8 PNX85xx video flow diagram

The Analogue Video Front-End (AVFE) provides the interface to external analogue baseband video sources and IF inputs. It supports the following inputs:

- 1fh - CVBS, Y/C, YPbPr, RGB.
- 2fh - YPbPr, RGB.
- IF - low-IF, SSIF.

The Video Capture Pipe (VCP) is used to capture analogue video inputs and consists of a number of blocks:

- The VCP-RX block that contains digital IF processing, a Video Decoder, a 3D-combfilter, and a VBI-Data Capture unit together with a number of smaller control functions.
- The VCP-PSUD which allows VBI data, such Teletext and Closed Captioning, to be stored in memory.
- The VCP-PSUV which allows captured video data to be stored in memory.

The HDMI receiver interface supports the capture of signals compliant with the HDMI V1.1 specification. It consists of two blocks:

- Block HDMI-RX contains the de-serializer, HDCP, audio and video data capture and info packet extraction, together with audio formatting.
- Block HDMI-RX2DTL allows captured video data to be stored in memory.

The Memory Based Video Processor TV (MBVP_L2TV) is used on the main video channel for de-interlacing and scaling of images, together with video measurement functions.

The Video Composition Pipe TV (CPIPE_L2TV) is used to perform picture improvements on video and merge the video layer and 2 graphics layers into a single stream.

The Flat Panel Display-LVDS (FPD-LVDS) provides a serial interface for 10-bit RGB output data towards the LCD panel.

The Memory Based Video Processor VO (MBVP_2LVO) is used on the main video channel for scaling of images for monitor out.

The Video Composition Pipe VO (CPIPE_VO) is used to merge a video and a graphics layer into a single stream together with insertion of VBI and CGMS data.

The Digital Encoder (DENC) supports encoding of a digital video stream from the CPIPE_VO into Analogue CVBS or Y/C.

9.6.2 Audio Subsystem

Refer to figure “9-9 PNX85xx audio flow diagram” for a clarification of the blocks that are used in this device.

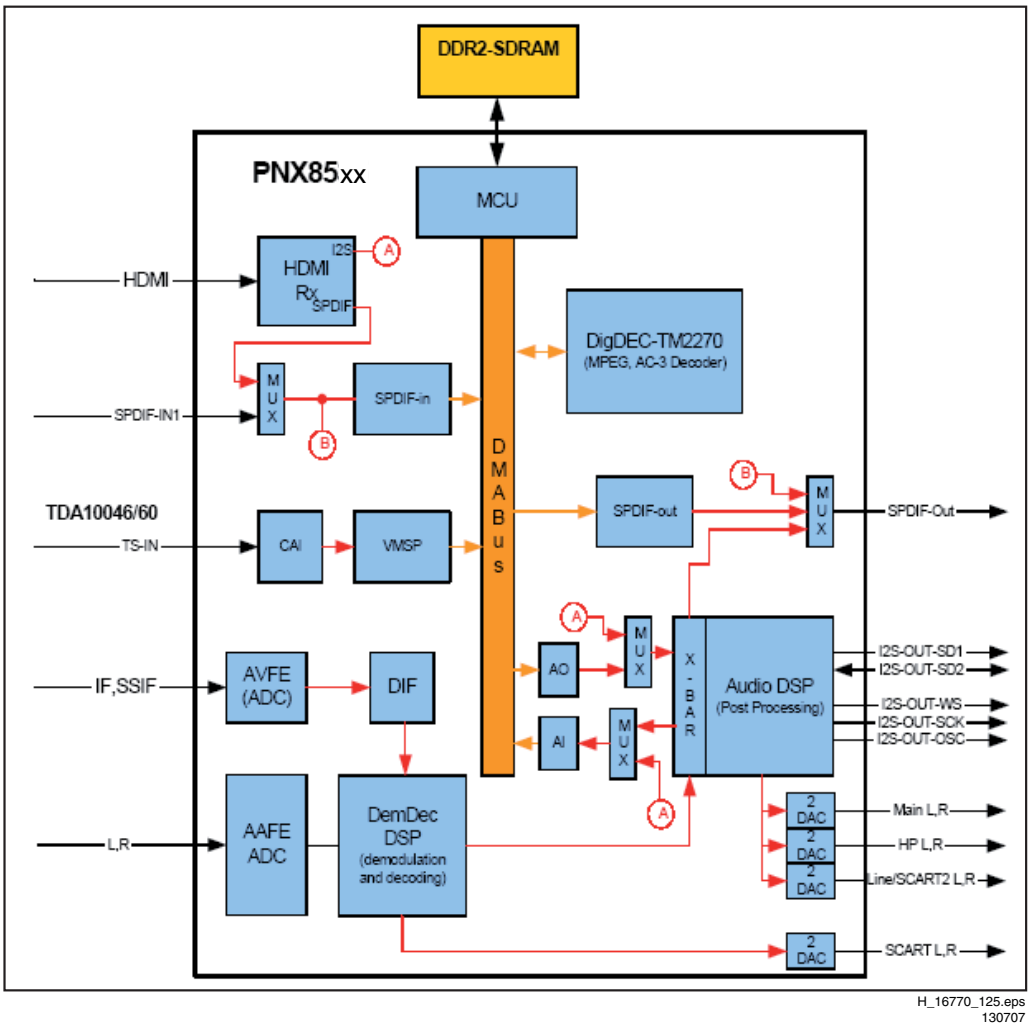

Figure 9-9 PNX85xx audio flow diagram

The Analogue Audio Front-End Input (AAFE) block is used to capture Baseband Audio Inputs.

The Sony/Philips Digital Interface (SPDIF) input is used to get compressed data into the system memory. The multiplexer in front of the block allows two possible sources of SPDIF signals.

The SPDIF Output is used to generate either PCM data or a compliant IEC-61937 compressed stream containing MPEG/Dolby Digital format.

The Audio Input (AI) block is used to transfer stereo audio (I^2S channel) from the Audio DSP into the system memory for "lip-sync" delay.

The Audio Output (AO) block supports output of up to four stereo I^2S channels. The AO is used to transfer data from the system memory to the Audio DSP, for post processing of the signal at a sampling frequency of 48 kHz (max.).

Demodulation & Decoding DSP is used for demodulation and decoding of all analogue terrestrial TV sound standards that the TV520 platform covers.

The Audio Post-Processing DSP supports DPLII together with volume and tone control, spatializers, and equalizers for 6 channels (max.)

Digital Audio Decoder DSP is used to decode digital compressed streams such as MPEG and AC-3. This runs as SW Codecs on the AV-DSP.

9.6.3 Audio-Video Codec Subsystem

The AV Codec subsystem consists of the modules required to capture and de-scramble Transport stream inputs together with decoding of Audio/video Streams. Refer to figure "PNX85xx video flow diagram" for a clarification.

The sub-system consists of the following modules:

The Conditional Access Interface block provides a direct interface towards a PCMCIA socket for Conditional Access. It supports both the DVB CI-CA Specification and the CableCard (POD) Interface.

The MPEG System Processor (VMSP) provides parsing an MPEG-2 transport stream, including de-scrambling, de-multiplexing and appropriate routing of data to the memory.

The Video MPEG Decoder (VMPG) performs MPEG2 decoding for both MP@ML and MP@HL streams.

9.6.4 Control and Compute Subsystem

Refer to figure "Control and compute subsystem" for a clarification of the blocks that are used in this device.

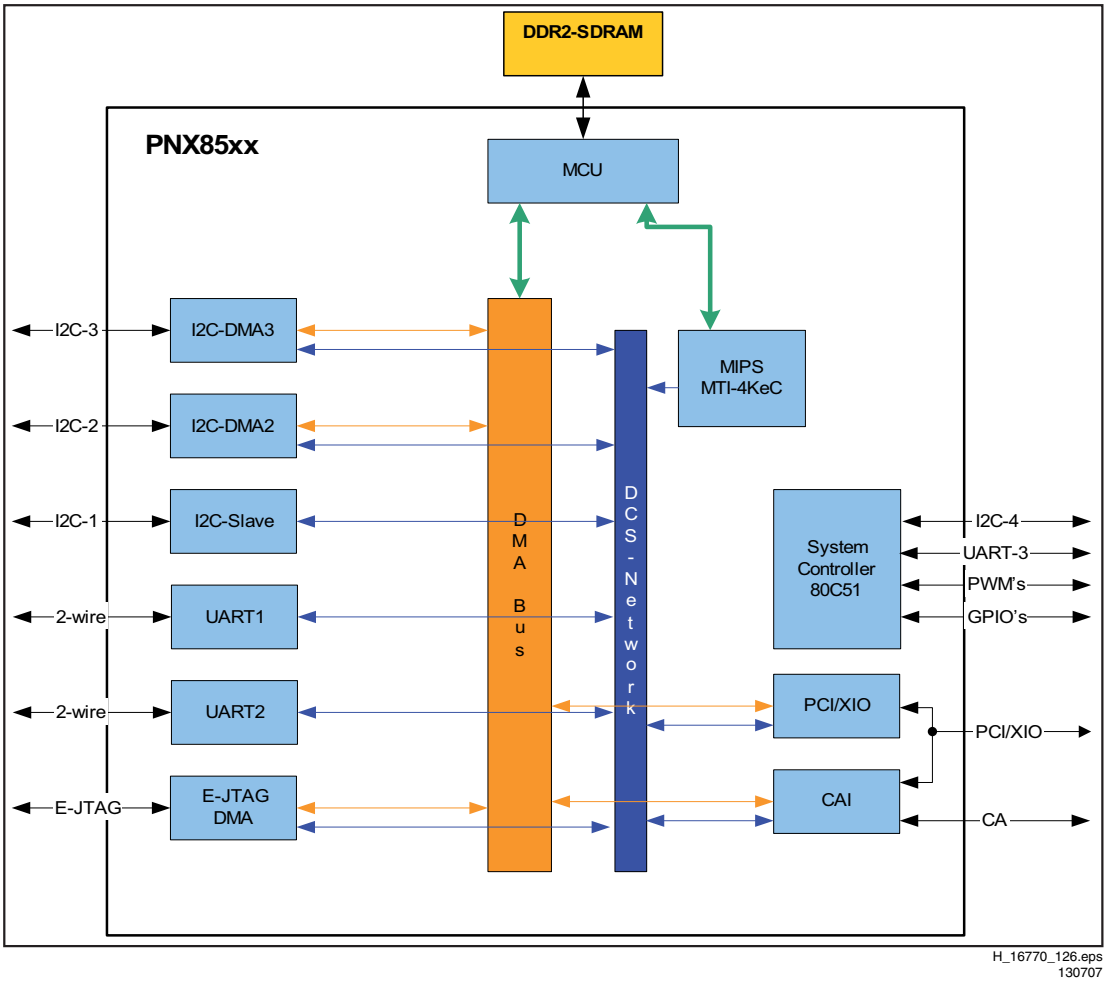

Figure 9-10 Control and compute subsystem

The Control and compute subsystem consists of the main processor, control peripherals and the memory system.

The MIPS 4KEc is a 32-bit MIPS RISC core. It has direct access to connectivity peripherals to support system features via PCI, I^2C, UART or General Purpose I/O. A JTAG interface provides processor software debug capabilities.

The Memory Control Unit (MCU) is a 32-bit DDR2 SDRAM interface supporting DDR2-533 with an address range of 128 MB (max.).

The PCI/XIO interface supports PCI Rev2.2 and can be used to access 8/16-bit external NAND-Flash memory.

The Conditional Access Interface supports direct control and communication to the PC-Card attached to a PCMCIA interface. The interface supports the DVB CI-CA and CableCard specification.

9.7 Back-end

Refer to figures “9-1 Architecture of TV522/92 platform” earlier in this chapter for details. Refer also to block diagrams B05, B05, B06 and AB.

In HD sets (50 / 100 Hz), the output signal coming from the PNX85xx is fed to the PNX5100 and then to the Spartan-3 FPGA for driving the AmbiLight units. The PNX5100 3 also generates the pulse-width modulated signal needed for the “Dimming Backlight” feature, which ensures additional motion sharpness. As some displays require an analogue signal to switch the LCD, a multiplexer is added to transform the pulse width modulated signal. An additional signal, coming from the PNX85xx, makes the selection between analogue and pulse-width modulation, depending on which display is used. Scanning back light displays require an analogue signal, and all other displays a pulse-width modulated.

Refer to figure “9-11 PNX5100 Detailed Video Block diagram”.

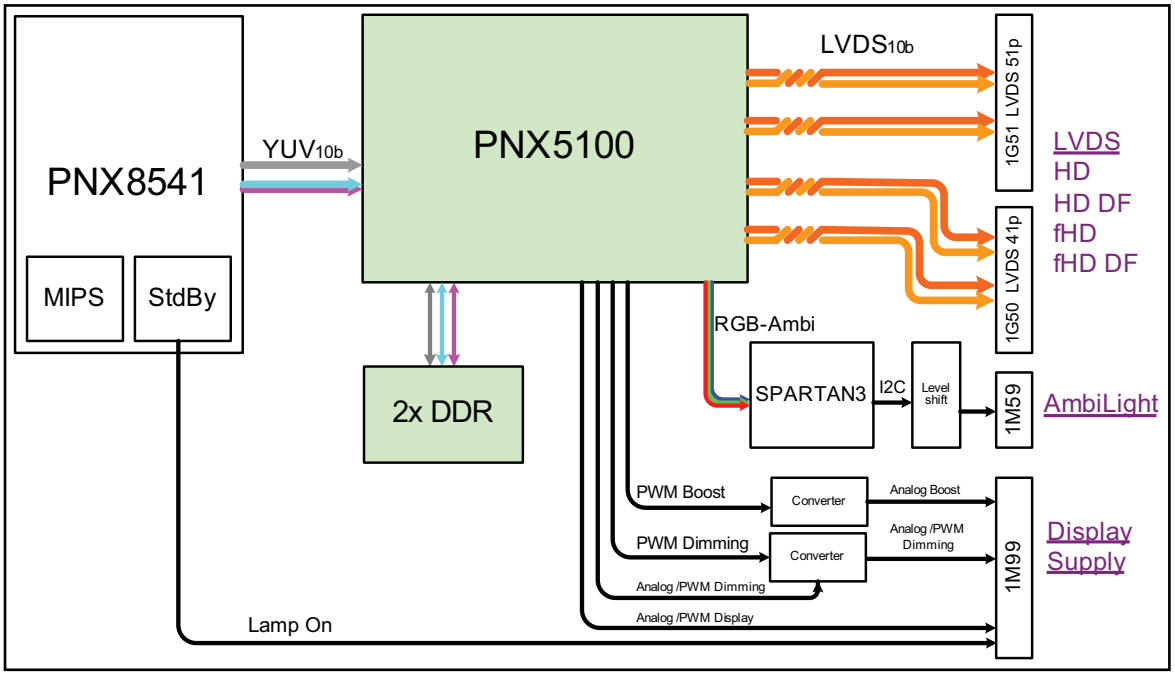

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Figure 9-11 PNX5100 Detailed Video Block diagram

9.7.1 PNX5100

The PNX5100 performs the following tasks:
- Picture quality improvement (Natural Motion, etc.).
- Video and graphics (On Screen Display) mixing.
- Up conversion from 50/60 to 100/120 Hz.
- Colour processing
- Sharpness processing
- Backlight control
- AmbiLight pre processing
- Switching On and Off of the display
- Pattern generator

The PNX5050 interfaces:
- Video input (CMOS).
- Graphics input (PCI).
- I^2C.
- Field memory (2 × DDR).
- Video output: LVDS (single, dual or quad) to display
- Backlight control: PWM for dimming and boost
- AmbiLight: CMOS sequential RGB to FPGA
- GPIO

Refer to figure “9-11 PNX5100 Detailed Video Block diagram” for details.

9.8 Ambient Light, Spartan-3

In this chassis, LED AmbiLight units are used as light units. The units are completely aligned in factory and are a “Black Box” for Service. When defective, they must be replaced entirely. Refer to the Spare Parts List for the correct order number.

The AmbiLight units are addressed by I^2C. The communication with the SSB to the ARM processor(s) of the units is bi-directional.

On the SSB the FPGA Spartan-3 performs driving towards the Pixelated AmbiLight units. The following features have been incorporated:
- Dedicated dealer mode
- 9600 series:
  - Both left and right side of the screen two pixels
  - Lounge Light mode
  - One controlling microprocessor.
- 9700 series:
  - Both left and right side of the screen three pixels
  - Top side of the screen three pixels
  - Lounge Light mode
  - Two controlling microprocessors.

9.9 DLNA

Is an international, cross-industry collaboration of consumer electronics, computing industry and mobile device companies standard. The main objective of DLNA is the establishment of a wired and wireless interoperable network of personal computers (PC), consumer electronics (CE) and mobile devices in the home and on the road, enabling a seamless environment for sharing new digital media and content services. DLNA is focused on delivering an interoperability framework of design guidelines based on open industry standards to complete the cross-industry digital convergence. The TV522 platform is set up as Digital Media Player. It can find and play or display the content that is shared on your network by server devices. In this chassis, an Ethernet MAC/PHY for wired Ethernet is incorporated to support DLNA.

Main features:
- National Semiconductors DP83816
- Controlled over PCI interface
- Physical layer uses a top-entry RJ45 with integrated magnetics (UTP)
- Supports 10M and 100M (full and half duplex)
- Uses 3V3 only (divided into separate analog and digital supply planes)
- The network controller shares the interrupt with the USB host controller
- The network controller can access the DRAM to dump/fetch packets.

9.10 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16 : 9 format, 12 = play 4 : 3 format
2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV
AP	Asia Pacific
AR	Aspect Ratio: 4 : 3 or 16 : 9
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATSC	Advanced Television Systems Committee, the digital TV standard in the USA
ATV	See Auto TV
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
AV	External Audio Video
AVC	Audio Video Controller
AVIP	Audio Video Input Processor
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BLR	Board-Level Repair
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT	Blue TeleteXT
C	Centre channel (audio)
CEC	Consumer Electronics Control bus: remote control bus on HDMI connections
CL	Constant Level: audio output to connect with an external amplifier
CLR	Component Level Repair
COLUMBUS	COlour LUMinance Baseband Universal Sub-system
ComPair	Computer aided rePair
CP	Connected Planet / Copy Protection
CSM	Customer Service Mode
CTI	Colour Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DDC	See “E-DDC”
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFI	Dynamic Frame Insertion
DFU	Directions For Use: owner's manual
DLNA	Digital Living Network Alliance
DMR	Digital Media Reader: card reader
DNM	Digital Natural Motion
DNR	Digital Noise Reduction: noise reduction feature of the set
DRAM	Dynamic RAM
DRM	Digital Rights Management
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for service technicians
DTCP	Digital Transmission Content Protection; A protocol for protecting digital audio/video content that is traversing a high speed serial bus, such as IEEE-1394
DVB-C	Digital Video Broadcast - Cable
DVB-T	Digital Video Broadcast - Terrestrial
DVD	Digital Versatile Disc
DVI(-d)	Digital Visual Interface (d= digital only)
E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information form the display.
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMI	Electro Magnetic Interference
EPLD	Erasable Programmable Logic Device
EU	Europe
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast BLanking: DC signal accompanying RGB signals
FDS	Full Dual Screen (same as FDW)
FDW	Full Dual Window (same as FDS)
FLASH	FLASH memory
FM	Field Memory or Frequency Modulation
FPGA	Field-Programmable Gate Array
FTV	Flat TeleVision
Gb/s	Giga bits per second
G-TXT	Green TeleteXT
H	H_sync to the module
HD	High Definition
HDD	Hard Disk Drive
HDCP	High-bandwidth Digital Content Protection: A “key” encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a “snow vision” mode or changed to a low resolution. For normal content distribution the source and the display device must be enabled for HDCP “software key” decoding.
HDMI	High Definition Multimedia Interface
HP	HeadPhone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I^2C	Inter IC bus
I^2D	Inter IC Data bus
I^2S	Inter IC Sound bus
IF	Intermediate Frequency
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of

	lines. The fields are written in “pairs”, causing line flicker.
IR	Infra Red
IRQ	Interrupt Request
ITU-656	The ITU Radio communication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a. SDI), is a digitized video format used for broadcast grade video. Uncompressed digital component or digital composite signals can be used. The SDI signal is self-synchronizing, uses 8 bit or 10 bit data words, and has a maximum data rate of 270 Mbit/s, with a minimum bandwidth of 135 MHz.
ITV	Institutional TeleVision; TV sets for hotels, hospitals etc.
JOP	Jaguar Output Processor
LS	Last Status; The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
LATAM	Latin America
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LORE	LOcal REgression approximation noise reduction
LPL	LG.Philips LCD (supplier)
LS	Loudspeaker
LVDS	Low Voltage Differential Signalling
Mbps	Mega bits per second
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
MOP	Matrix Output Processor
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
MPEG	Motion Pictures Experts Group
MPIF	Multi Platform InterFace
MUTE	MUTE Line
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
NTC	Negative Temperature Coefficient, non-linear resistor
NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non-Volatile Memory: IC containing TV related data such as alignments
O/C	Open Circuit
OSD	On Screen Display
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
P50	Project 50: communication protocol between TV and peripherals
PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
PCB	Printed Circuit Board (same as “PWB”)
PCM	Pulse Code Modulation
PDP	Plasma Display Panel
PFC	Power Factor Corrector (or Pre-conditioner)
PIP	Picture In Picture
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
POR	Power On Reset, signal to reset the uP
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PTC	Positive Temperature Coefficient, non-linear resistor
PWB	Printed Wiring Board (same as “PCB”)
PWM	Pulse Width Modulation
QRC	Quasi Resonant Converter
QTNR	Quality Temporal Noise Reduction
QVCP	Quality Video Composition Processor
RAM	Random Access Memory
RGB	Red, Green, and Blue. The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced.
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	RESET signal
ROM	Read Only Memory
R-TXT	Red TeleteXT
SAM	Service Alignment Mode
S/C	Short Circuit
SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
SCL	Serial Clock I^2C
SCL-F	CLock Signal on Fast I^2C bus
SD	Standard Definition
SDA	Serial Data I^2C
SDA-F	DAta Signal on Fast I^2C bus
SDI	Serial Digital Interface, see “ITU-656”
SDRAM	Synchronous DRAM
SECAM	SÉquence Couleur Avec Mémoire. Colour system mainly used in France and East Europe. Colour carriers= 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switched Mode Power Supply
SoC	System on Chip
SOG	Sync On Green
SOPS	Self Oscillating Power Supply
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
SSB	Small Signal Board
STBY	STand-BY
SVGA	800 × 600 (4 : 3)
SVHS	Super Video Home System
SW	Software
SWAN	Spatial temporal Weighted Averaging Noise reduction
SXGA	1280 × 1024
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TMDS	Transmission Minimized Differential Signalling
TXT	TeleteXT
TXT-DW	Dual Window with TeleteXT
UI	User Interface
uP	Microprocessor
UXGA	1600 × 1200 (4 : 3)
V	V-sync to the module

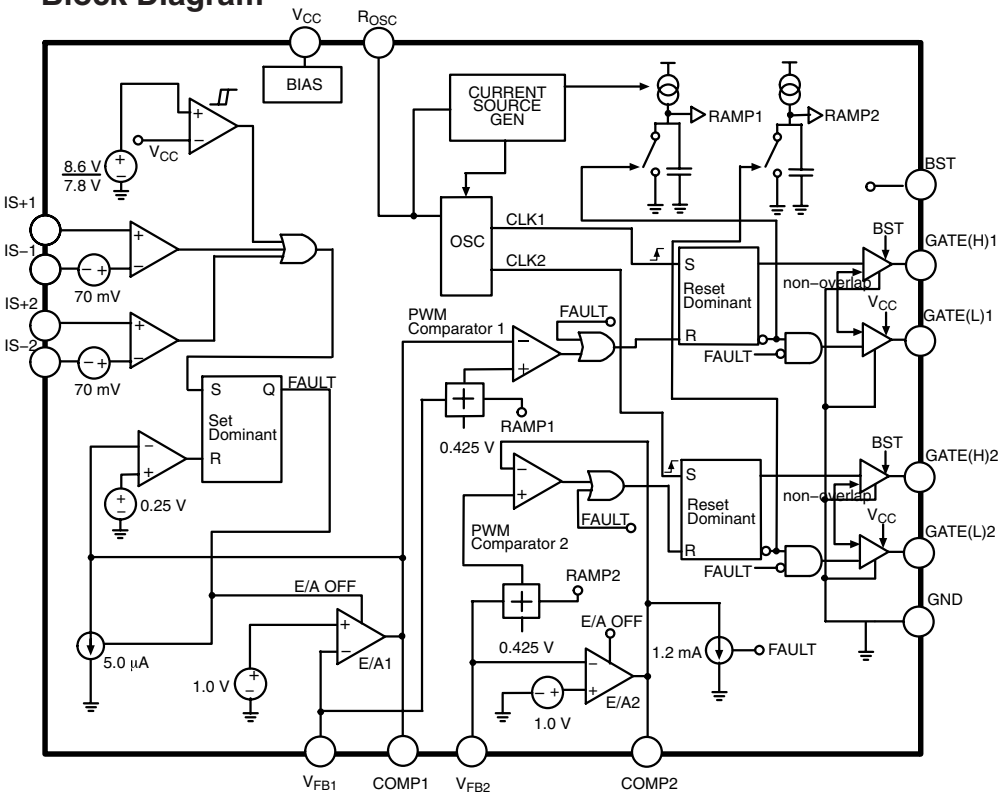
VCR	Video Cassette Recorder
VESA	Video Electronics Standards Association
VGA	640 × 480 (4 : 3)
VL	Variable Level out: processed audio output toward external amplifier
VSB	Vestigial Side Band; modulation method
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
WXGA	1280 × 768 (15 : 9)
XTAL	Quartz crystal
XGA	1024 × 768 (4 : 3)
Y	Luminance signal
Y/C	Luminance (Y) and Chrominance (C) signal
YPbPr	Component video. Luminance and scaled colour difference signals (B-Y and R-Y)
YUV	Component video

9.11 IC Data Sheets

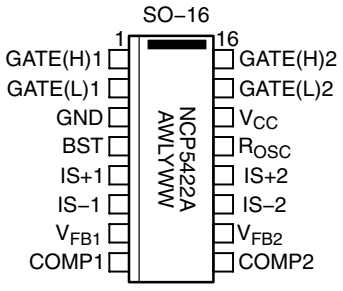
This section shows the internal block diagrams and pin configurations of ICs that are drawn as “black boxes” in the electrical diagrams (with the exception of “memory” and “logic” ICs).

9.11.1 Diagram B01A, NCP5422AD (IC 7U0A)

Block Diagram



Pin Configuration



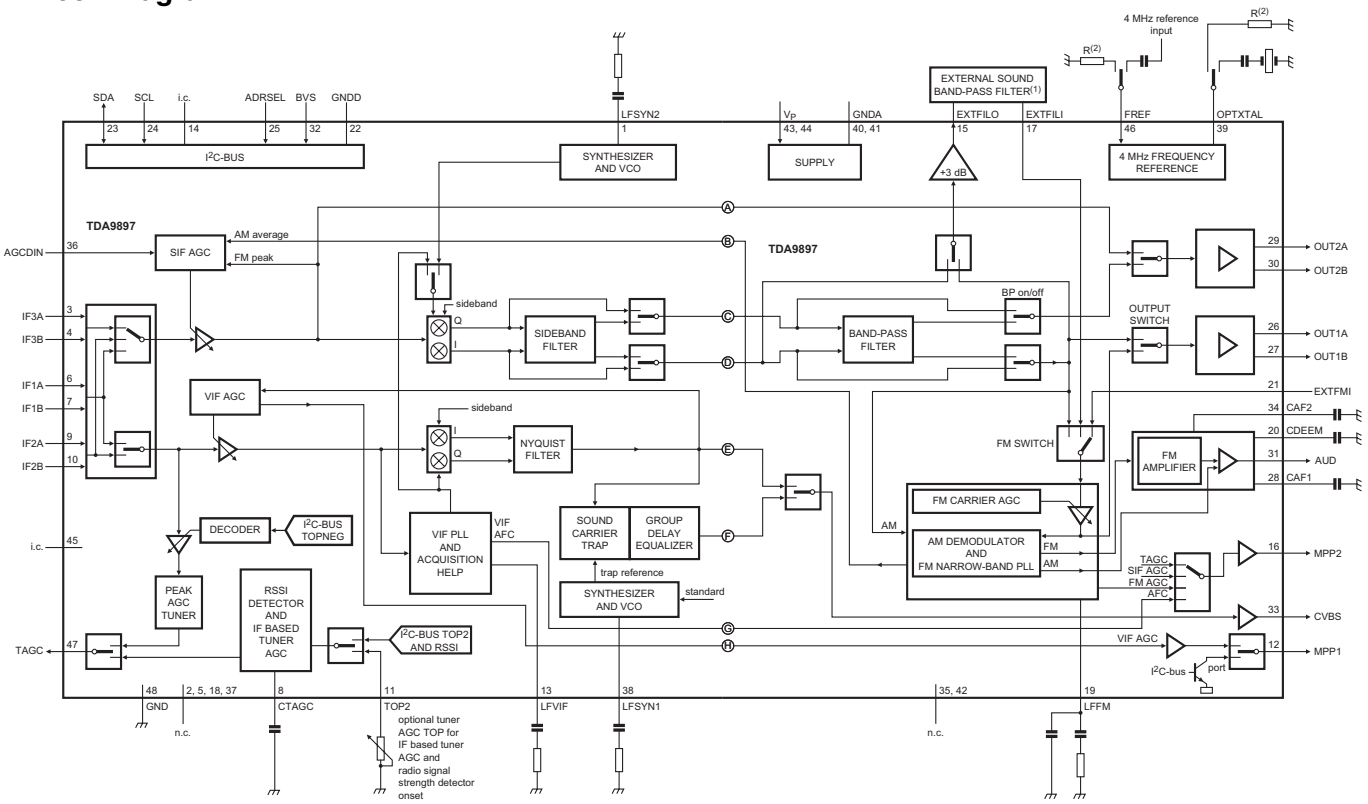
A = Assembly Location
WL = Wafer Lot
Y = Year
WW = Work Week

F_15400_129.eps
240505

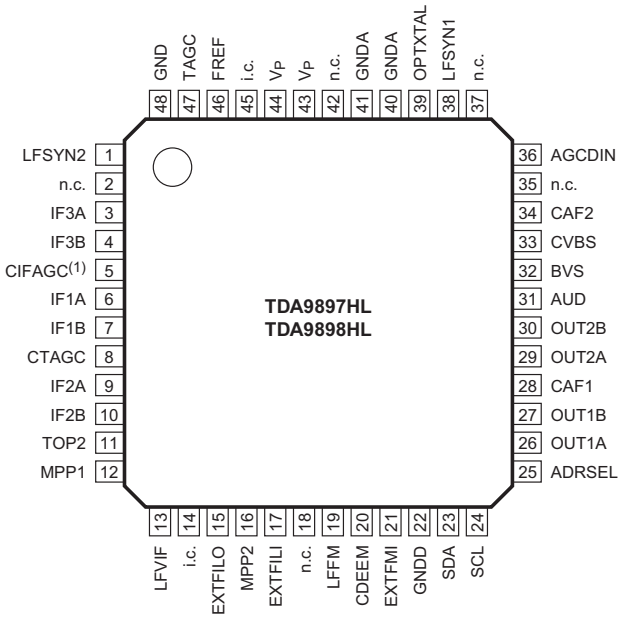
Figure 9-12 Internal block diagram and pin configuration

9.11.2 Diagram B02B, TDA9898HL (IC 7T59)

Block Diagram



Pin Configuration

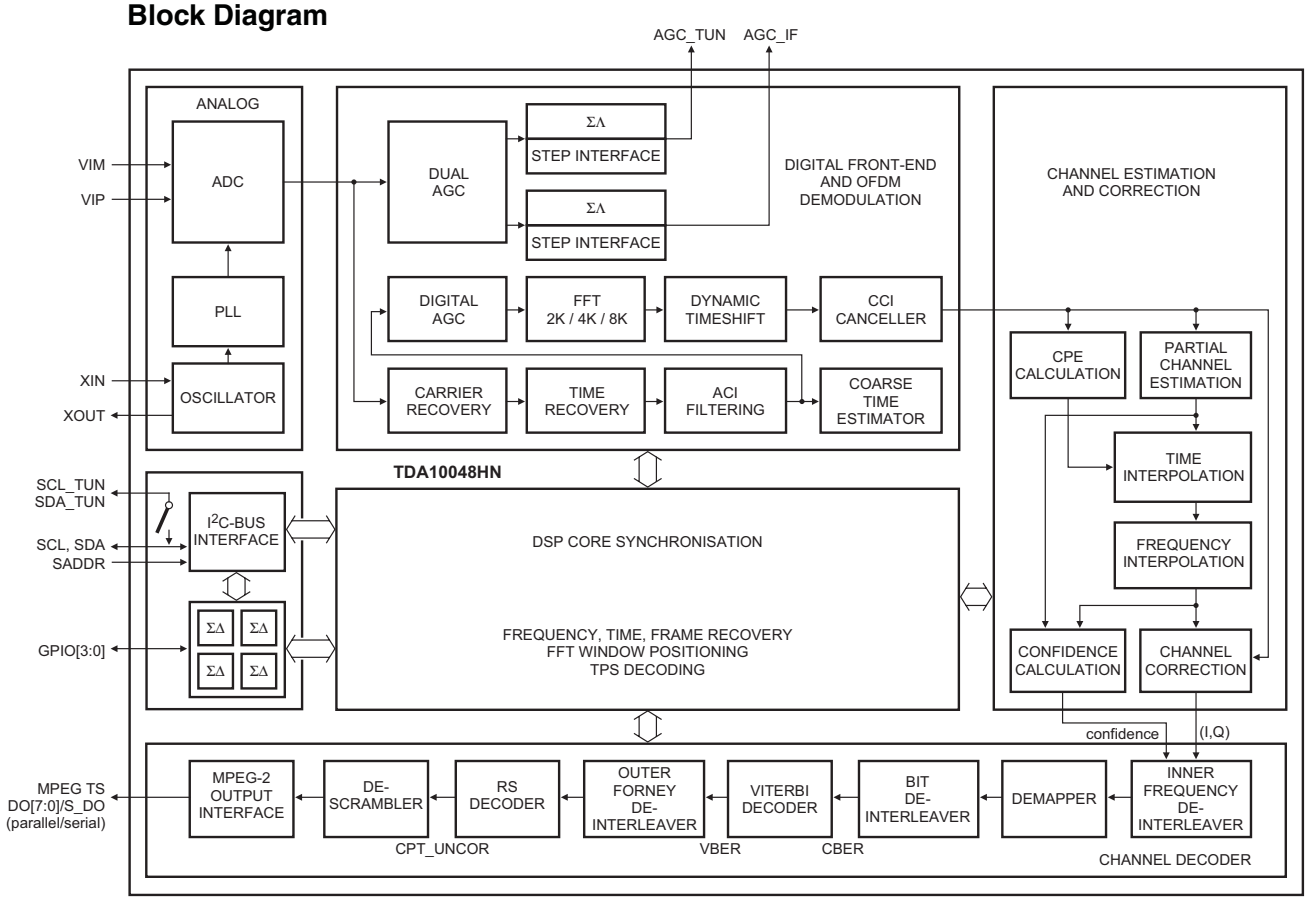


H_16800_029.eps
111007

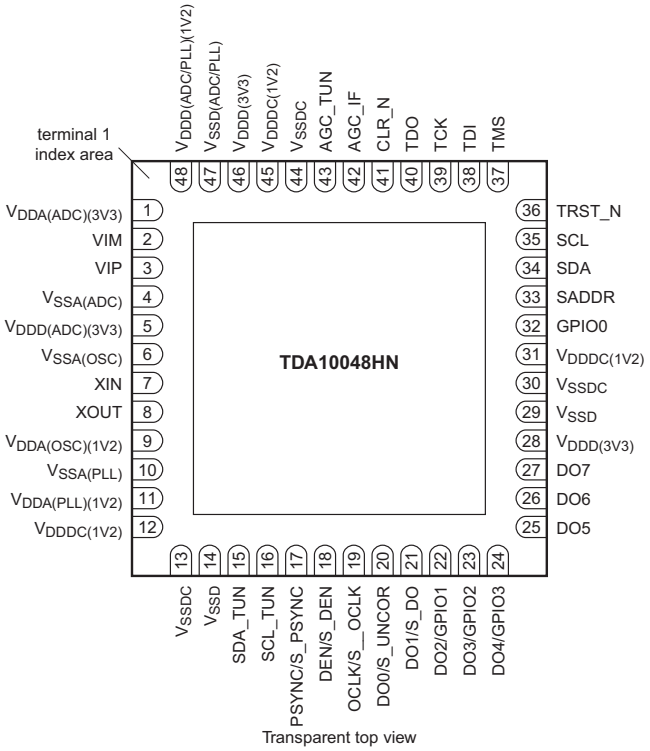
Figure 9-13 Pin configuration

9.11.3 Diagram B02A, TDA10048HN (IC7T17-1)

Block Diagram



Pin Configuration

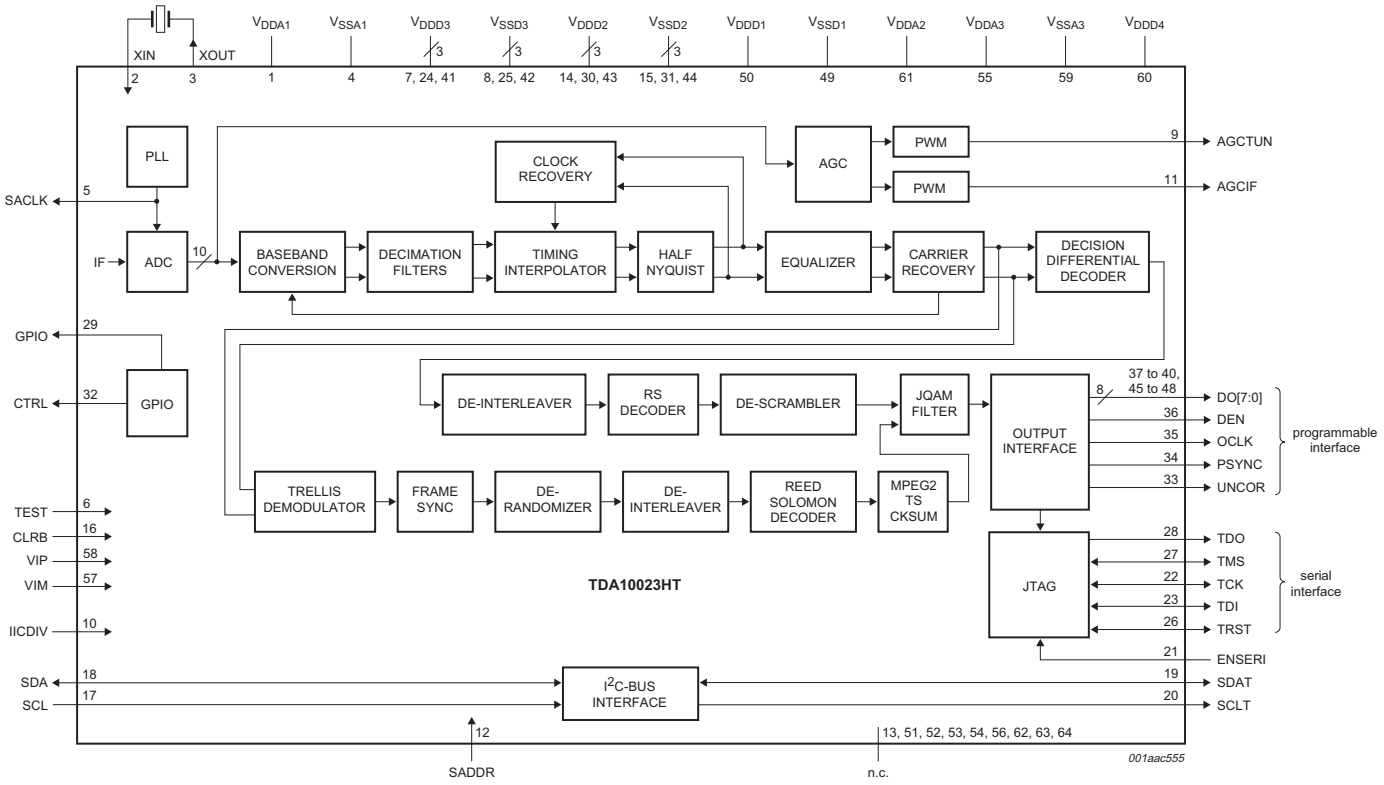


H_16800_127.eps
090507

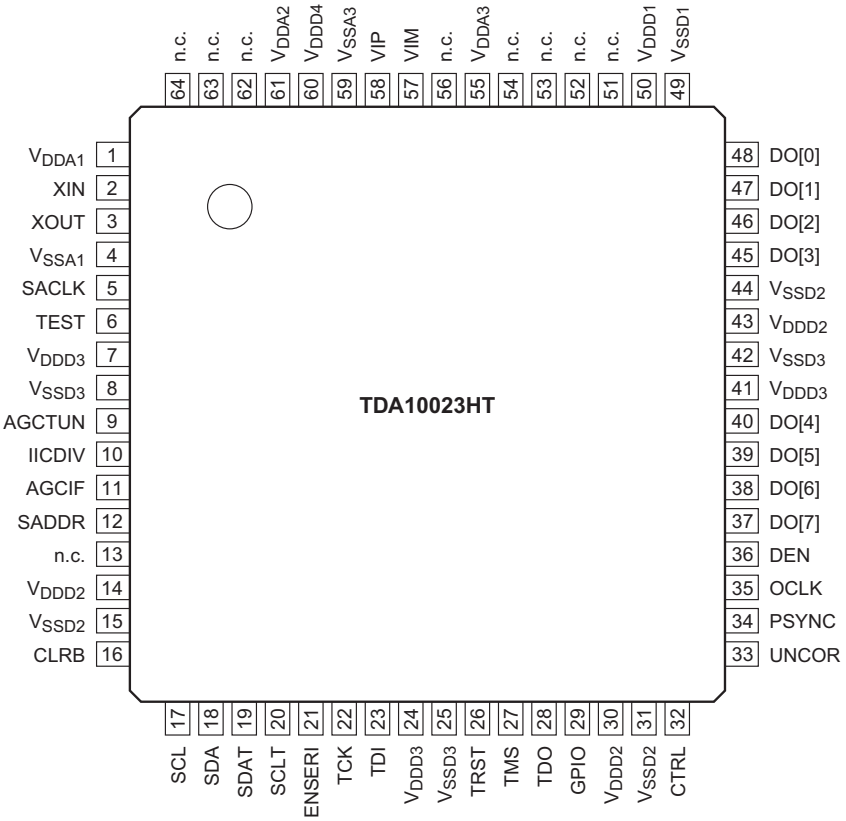
Figure 9-14 Internal block diagram and pin configuration

9.11.4 Diagram B02C, TDA10023HT (IC7TA4)

Block Diagram



Pin Configuration

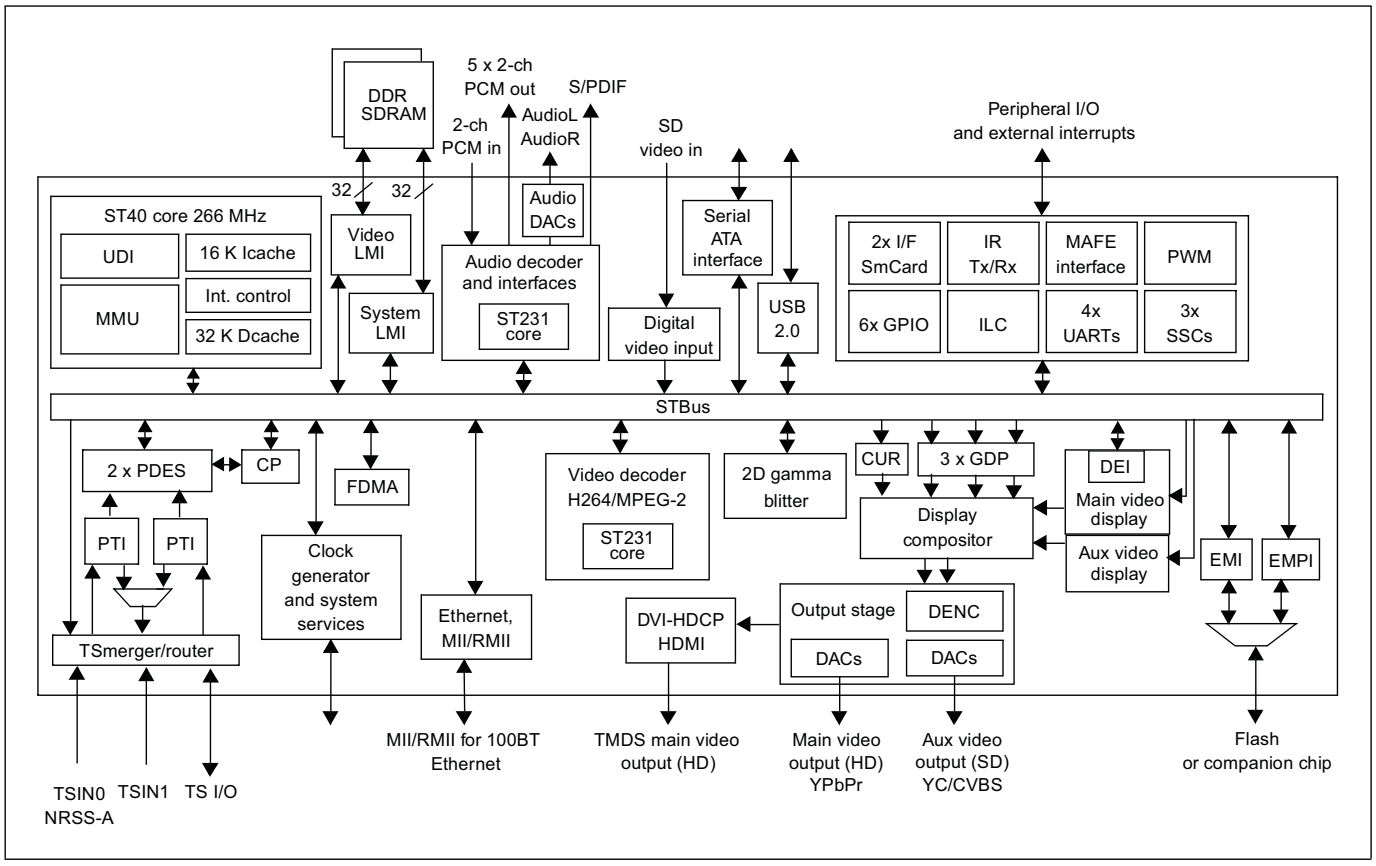


H_17650_072.eps
150108

Figure 9-15 Internal block diagram and pin configuration

9.11.5 Diagram B03B to F, STi7100 (IC7A00)

Block Diagram

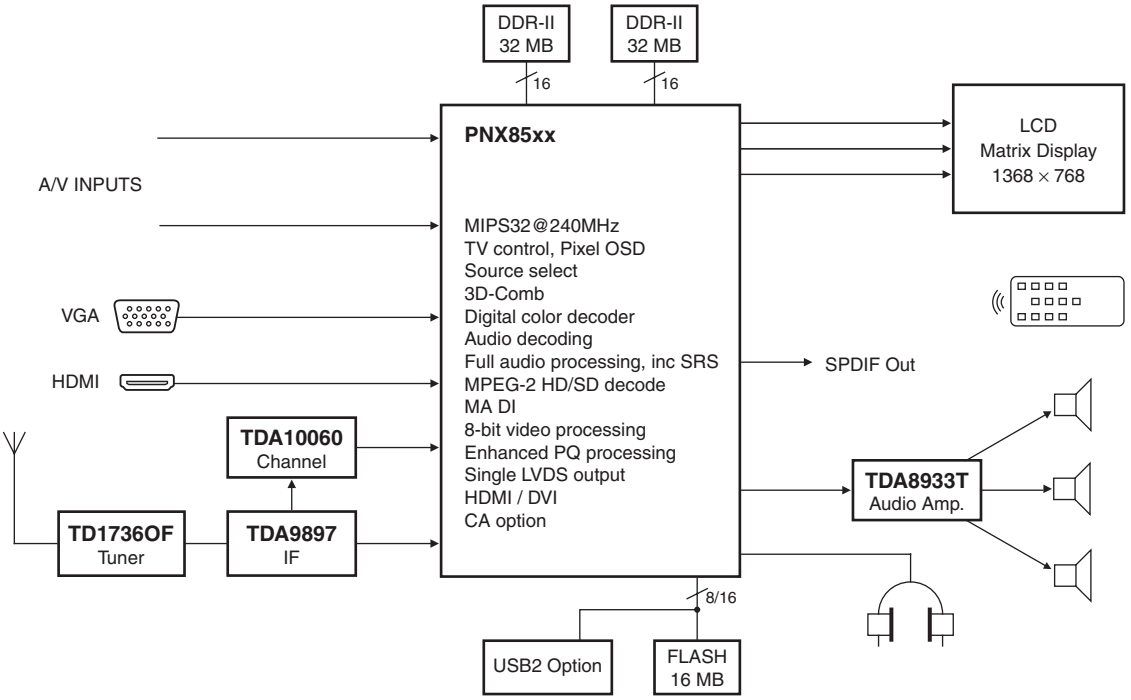


H_16780_085.eps
070907

Figure 9-16 Internal block diagram and pin configuration

9.11.6 Diagram B04, PNX85xx (IC 7H00)

Block Diagram



Pin Configuration

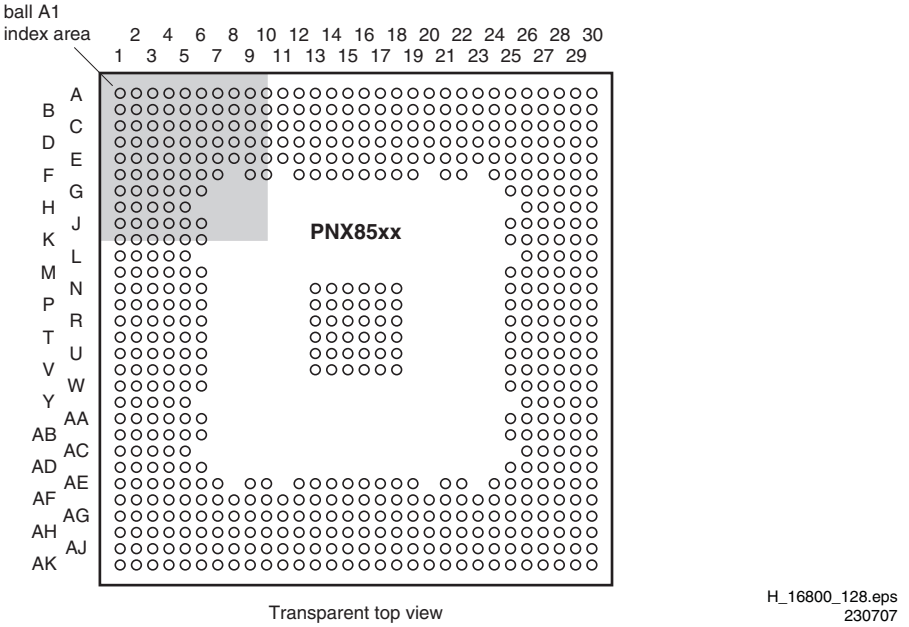
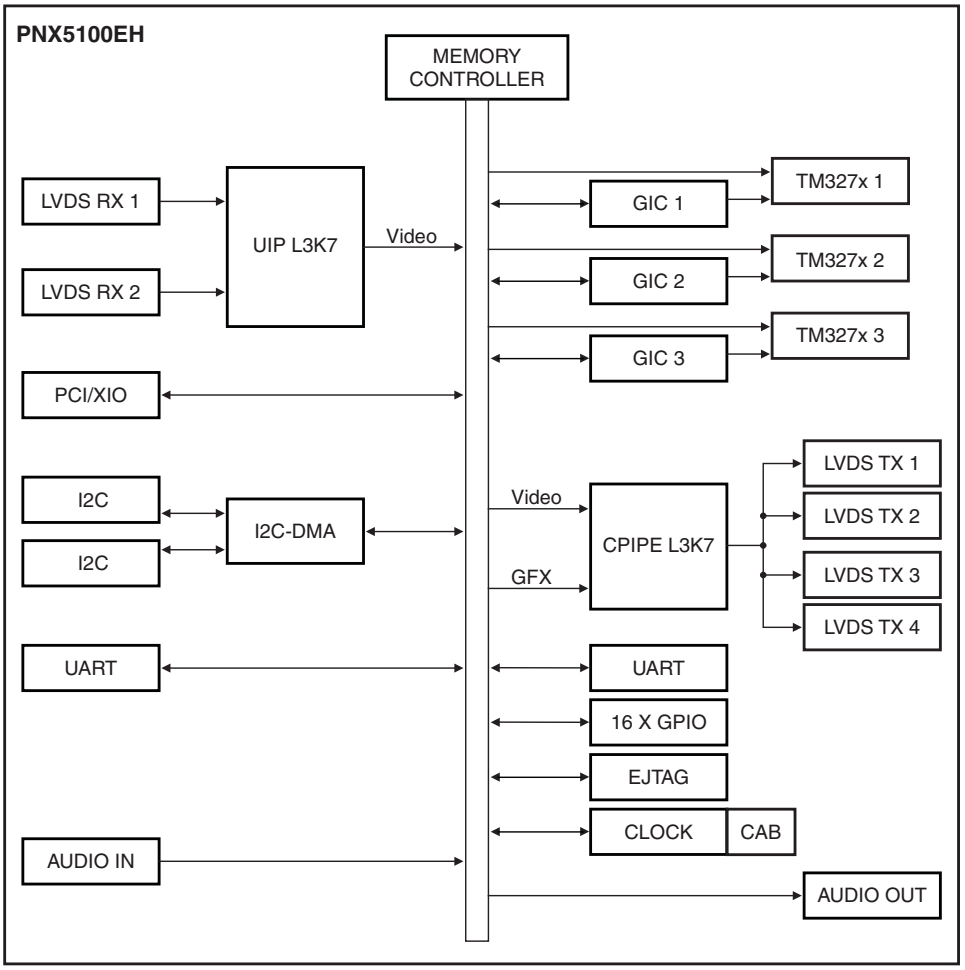


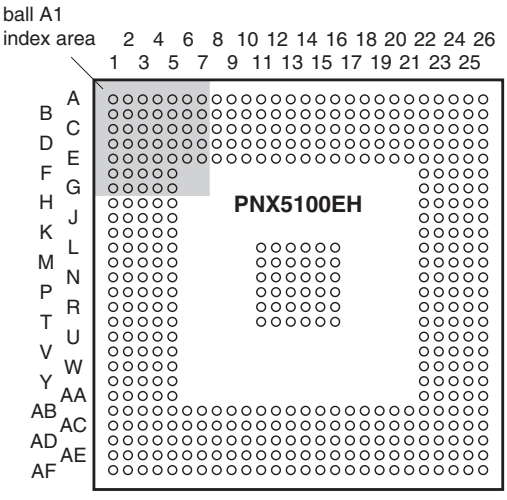
Figure 9-17 Pin configuration

9.11.7 Diagram B05, PNX5100 (IC 7C00)

Block Diagram



Pin Configuration



I_17660_149.eps
180308

Figure 9-18 Pin configuration

9.11.8 Diagram B06, XC3S250E Spartan-3 (IC 7F00)

Pin Configuration & Description

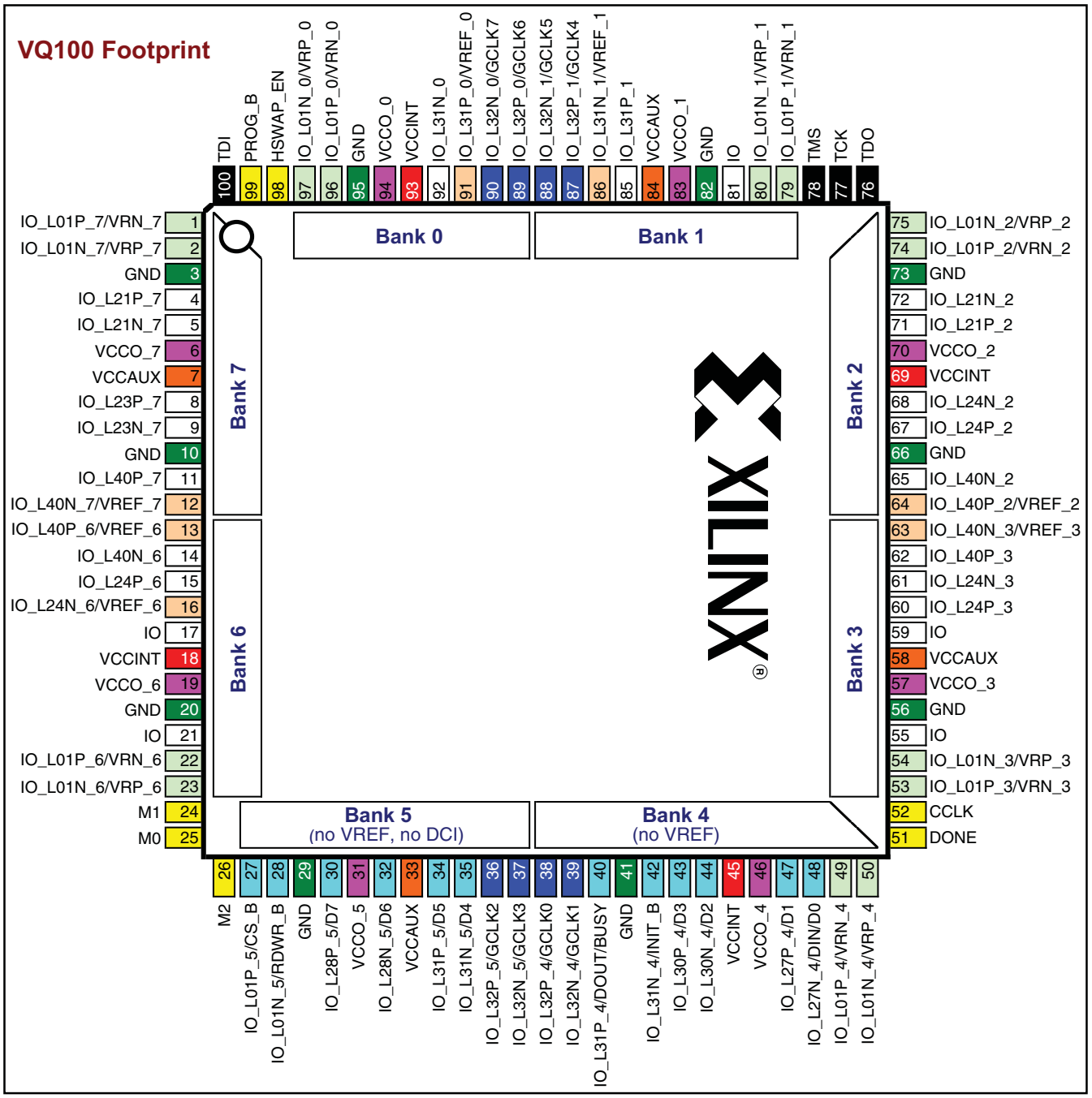


Figure 42: **VQ100 Package Footprint (top view). Note pin 1 indicator in top-left corner and logo orientation.**

22 **I/O:** Unrestricted, general-purpose user I/O	12 **DUAL:** Configuration pin, then possible user I/O	7 **VREF:** User I/O or input voltage reference for bank
14 **DCI:** User I/O or reference resistor input for bank	8 **GCLK:** User I/O or global clock buffer input	8 **VCCO:** Output voltage supply for bank
7 **CONFIG:** Dedicated configuration pins	4 **JTAG:** Dedicated JTAG port pins	4 **VCCINT:** Internal core voltage supply (+1.2V)
0 **N.C.:** No unconnected pins in this package	10 **GND:** Ground	4 **VCCAUX:** Auxiliary voltage supply (+2.5V)

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180308

Figure 9-19 Pin configuration

9.11.9 Diagram B07E, AD8197A (IC 7P02)

Block Diagram

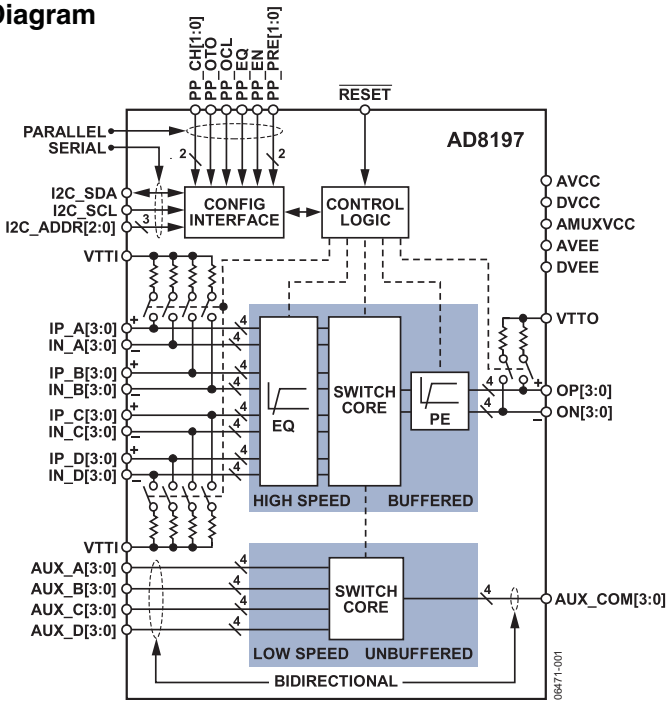
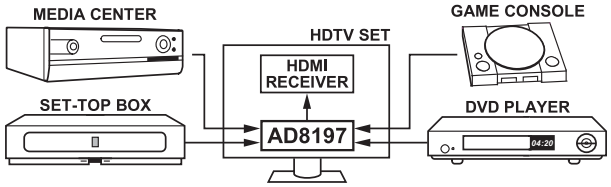


Figure 1.

TYPICAL APPLICATION



Pin Configuration

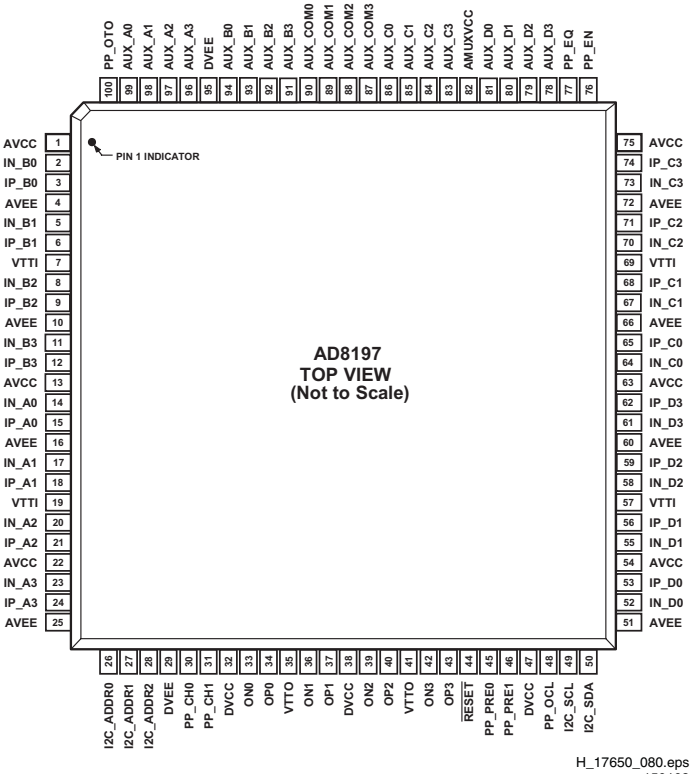
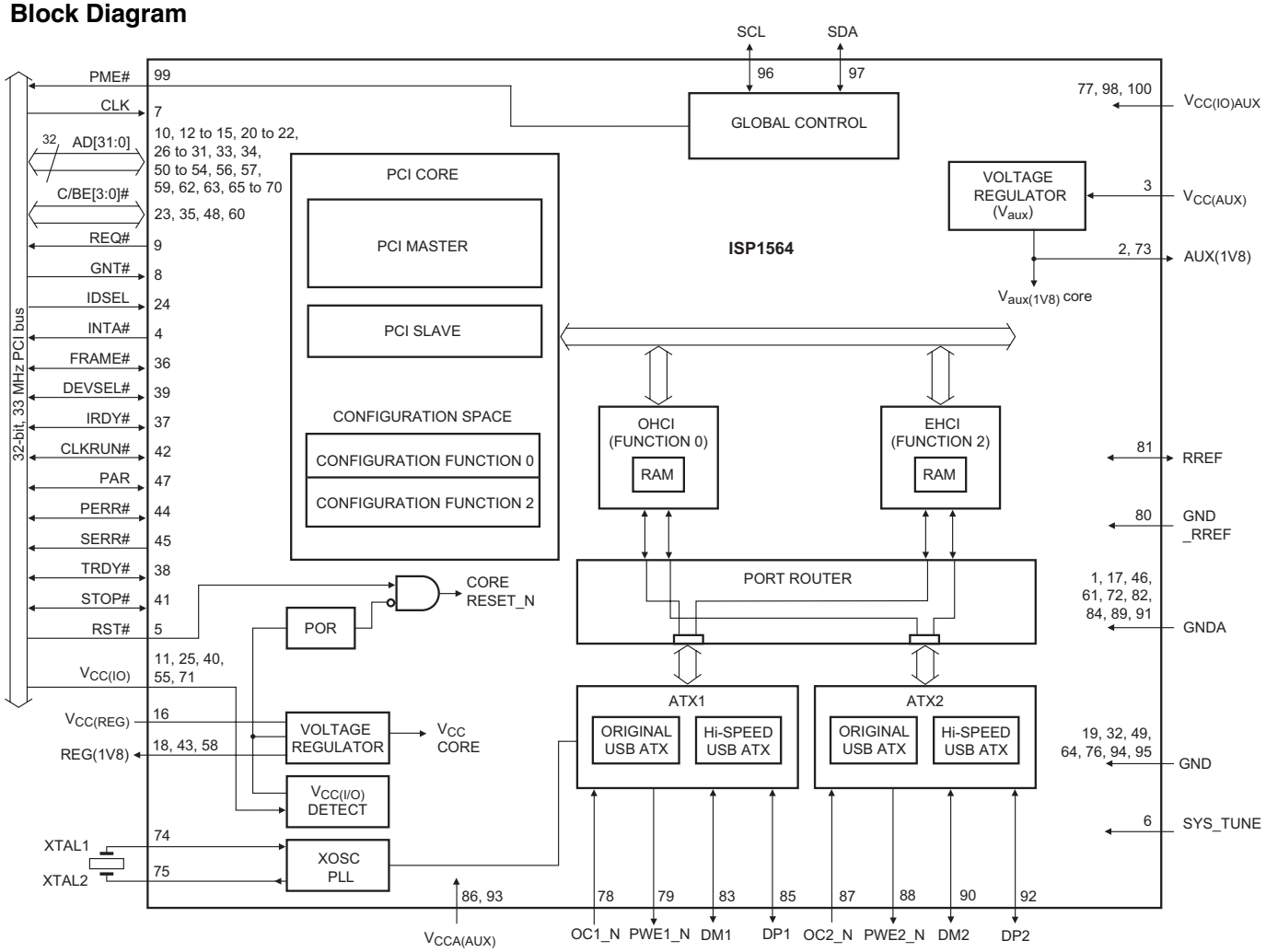


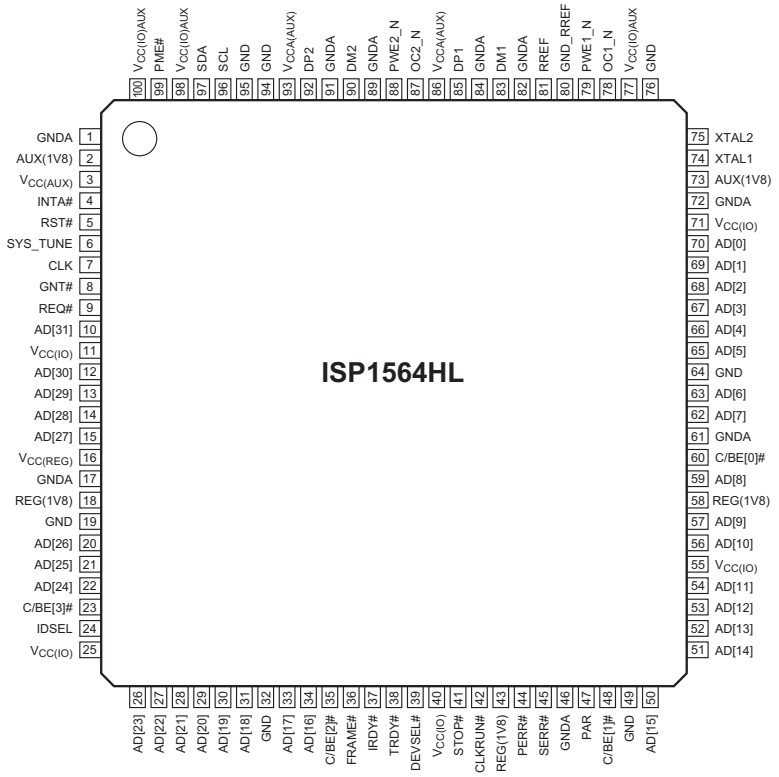
Figure 9-20 Internal block diagram and pin configuration

9.11.10 Diagram B09A, ISP1564HL (IC 7N00)

Block Diagram



Pin Configuration



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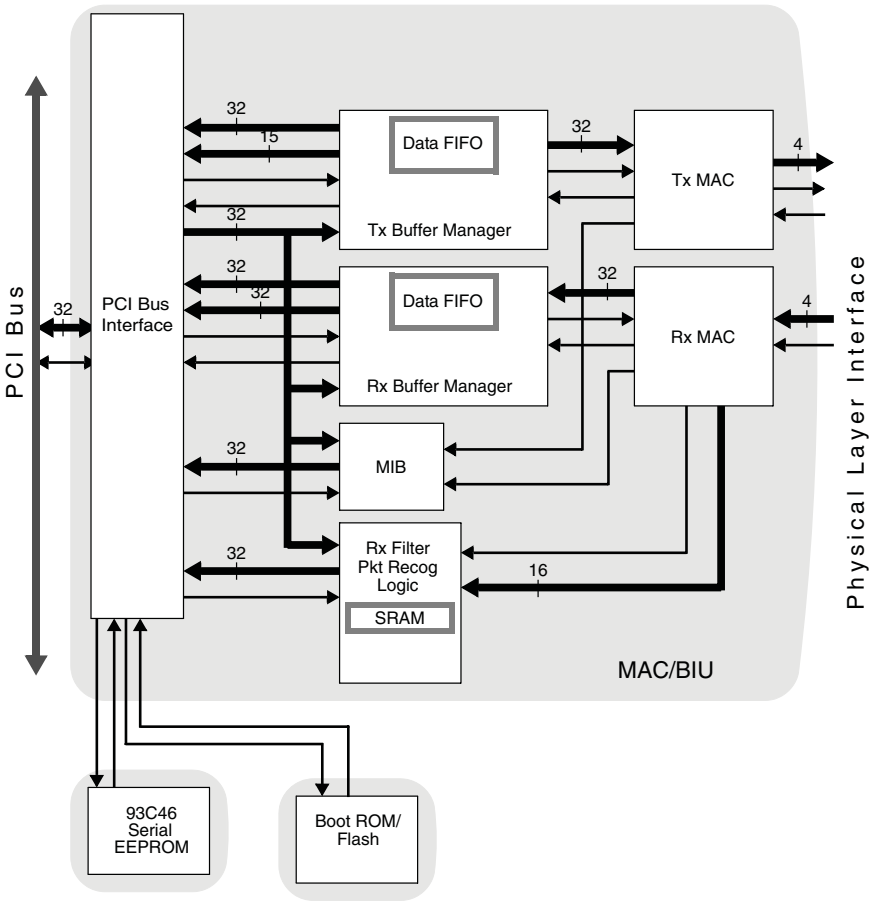
150108

Figure 9-21 Internal block diagram and pin configuration

9.11.11 Diagram B09B, DP83816AVNG (IC 7N04)

Block Diagram



Pin Configuration

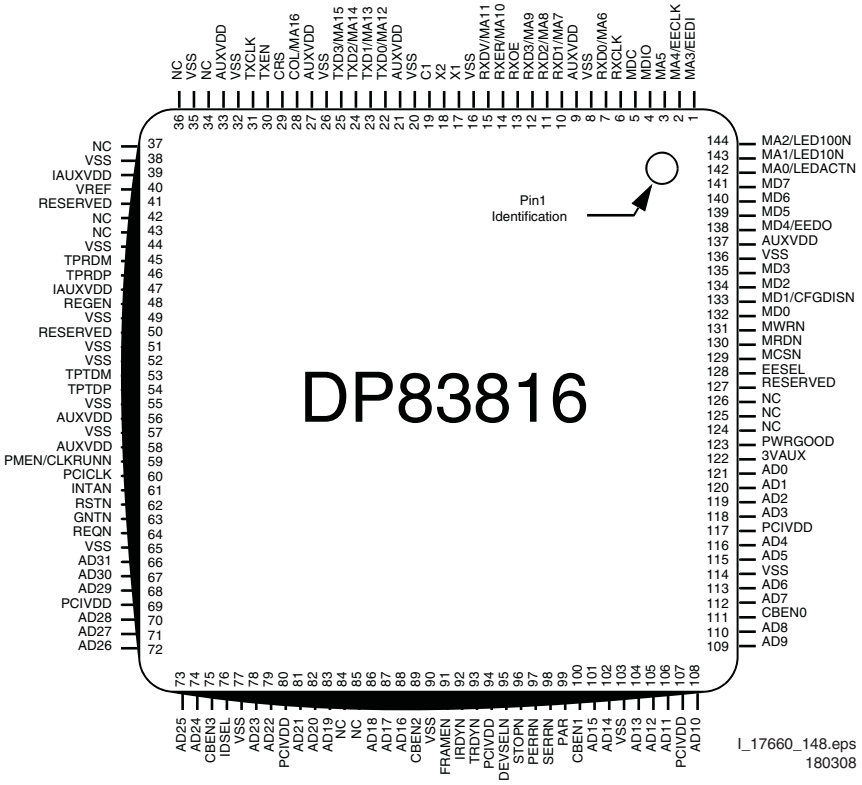
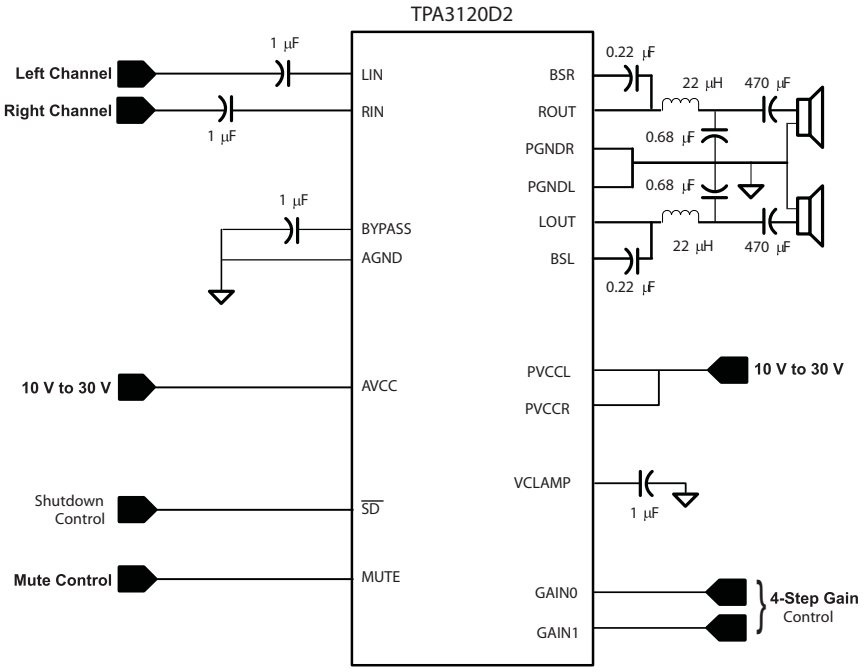


Figure 9-22 Internal block diagram and pin configuration

9.11.12 Diagram B10A, TPA3120D2 (IC 7D10)

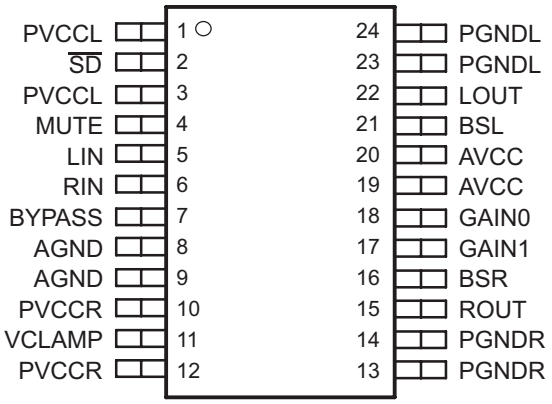
Block Diagram

SIMPLIFIED APPLICATION CIRCUIT



Pin Configuration

PWP (TSSOP) PACKAGE
(TOP VIEW)



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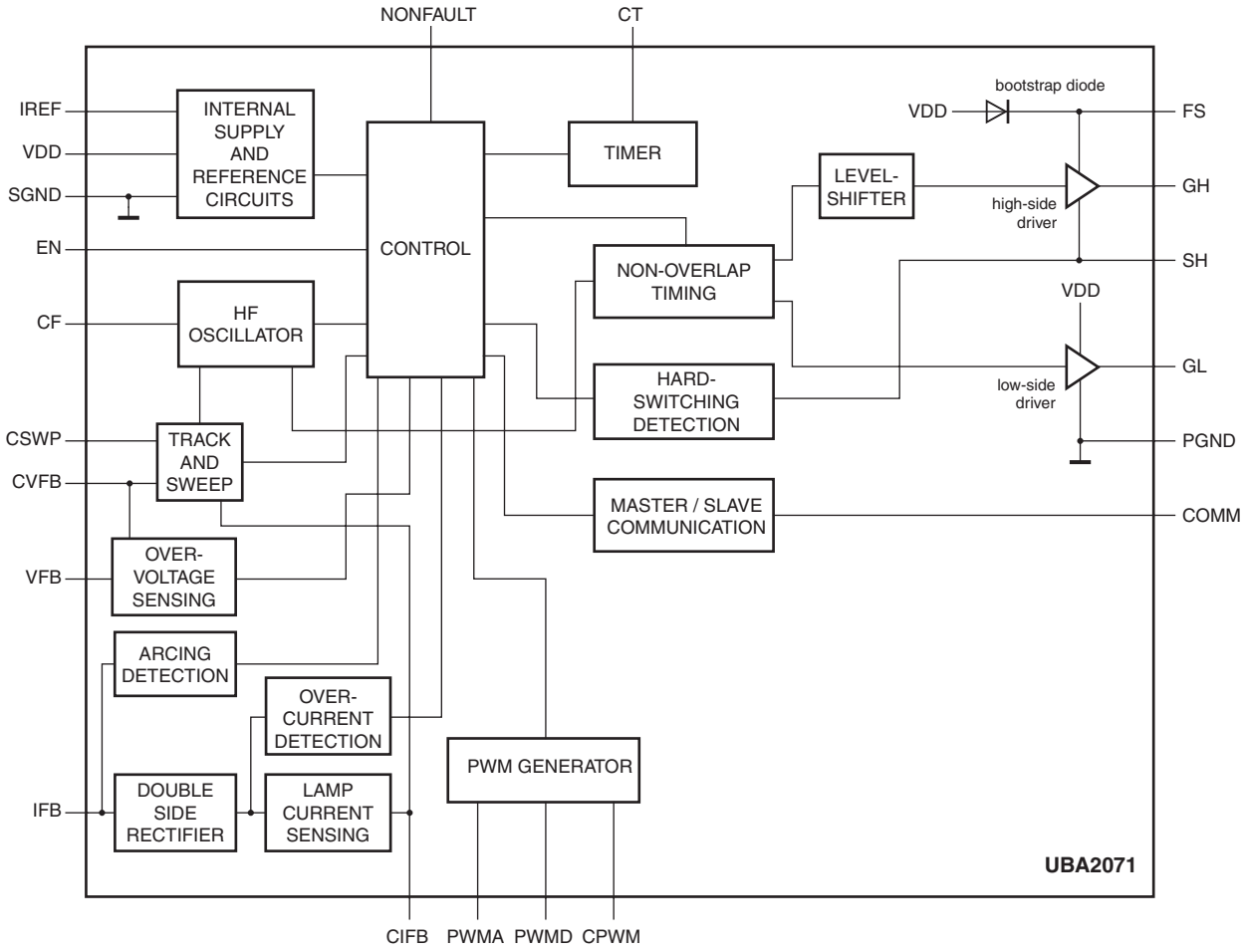
180308

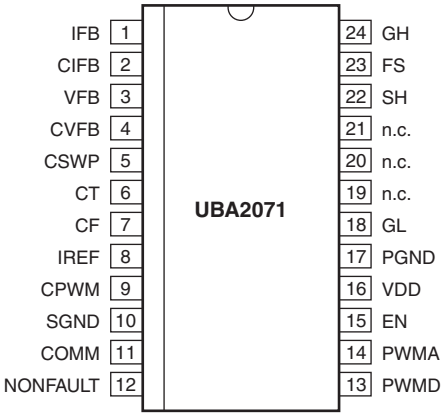
Figure 9-23 Internal block diagram and pin configuration

9.11.13 Diagram V2, UBA2071 (IC 7201)

Block Diagram



Pin Configuration



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140308

Figure 9-24 Internal block diagram and pin configuration

10. Spare Parts List & CTN Overview

For the latest spare part overview, please consult the Philips Service website.

Table 10-1 Sets described in this manual:

CTN	Styling
32PFL7623D/10	ME8+
32PFL9603D/10	VE8
37PFL9603D/10	VE8
42PFL7403D/10	ME8+
42PFL7403D/79	ME8+
42PFL7403S/60	ME8+
42PFL7423D/12	ME8+
42PFL7423H/12	ME8+
42PFL7433D/12	ME8+
42PFL7433S/60	ME8+
42PFL7623D/10	ME8+
42PFL9603D/10	VE8
42PFL9603H/10	VE8
42PFL9703D/10	VE8
42PFL9703D/79	VE8
47PFL7403D/10	ME8+
47PFL7403D/79	ME8+
47PFL7623D/10	ME8+
47PFL9603D/10	VE8
47PFL9703D/10	VE8
47PFL9703D/79	VE8

11. Revision List

Manual xxxx xxx xxxx.0

- First release.

Manual xxxx xxx xxxx.1

- **Added:** 32PFL7623D/10, 37PFL9603D/10, 42PFL7403D/10, 42PFL7403S/60, 42PFL7423D/12, 42PFL7423H/12, 42PFL7433D/12, 42PFL7433S/60, 42PFL7623D/10, 42PFL9703D/79, 47PFL7403D/10, 47PFL9703D/79.
- **Chapter 4:** added ME8+ disassembly instructions.
- **Chapter 5:** Added Stepwise Start-up information; removed error 25 (and -description); added error 48 description; additional textual changes.
- **Chapter 8:** Added option codes.
- **Chapter 9:** Added info for DPS-182CP A supply unit (32").

Manual xxxx xxx xxxx.2

- **Added:** 42PFL7403D/79, 47PFL7403D/79, 47PFL7623D/10.
- **Chapter 8:** Added option codes.

Manual xxxx xxx xxxx.3

- **Chapter 1:** EXT2 and HDMI connector pinning corrected.